DECEMBER, 1949

CQ

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- An All-Band Exciter with 829B Final
- The Monitoring Post — a New Feature
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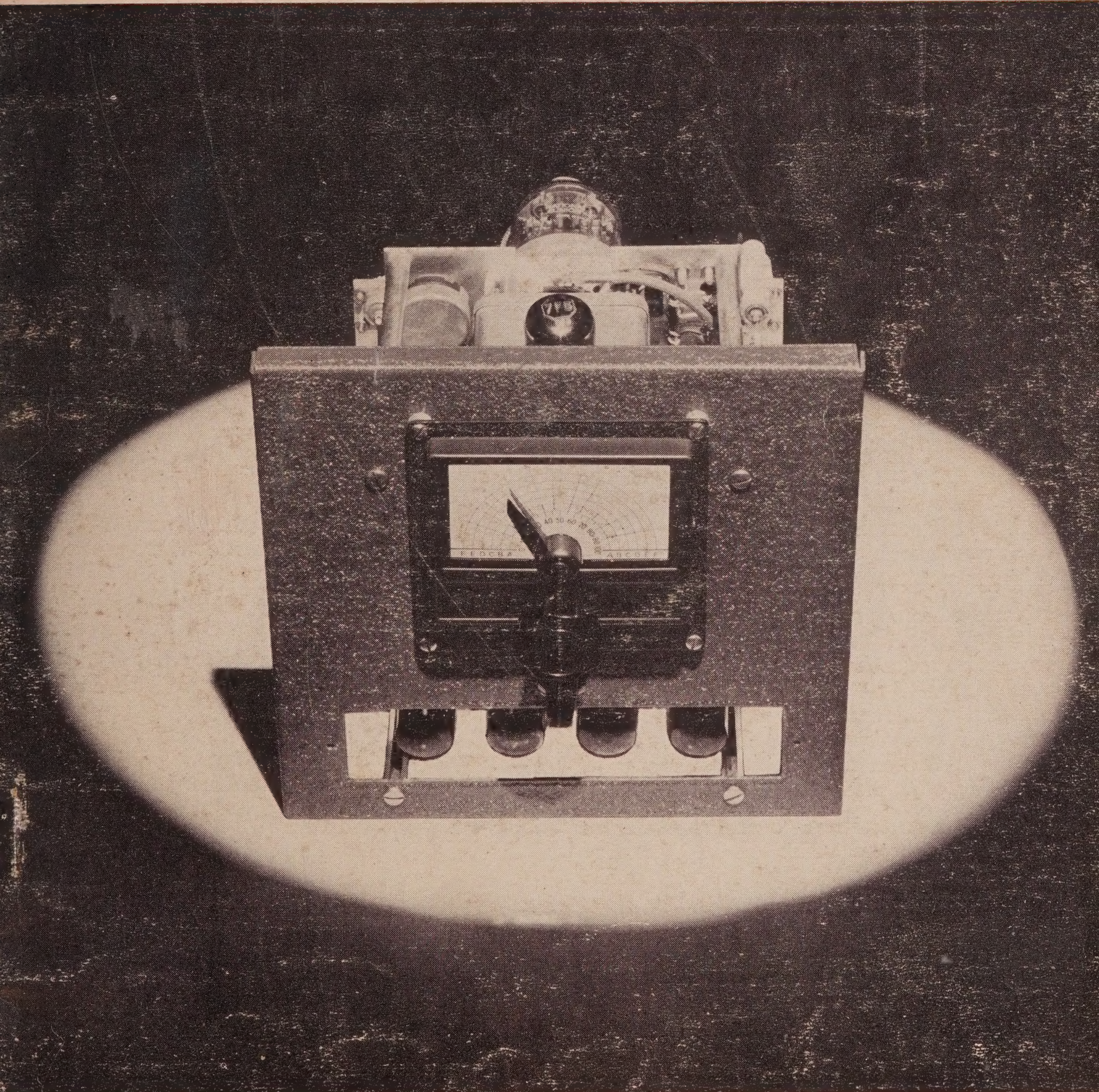
P149

35 CENTS

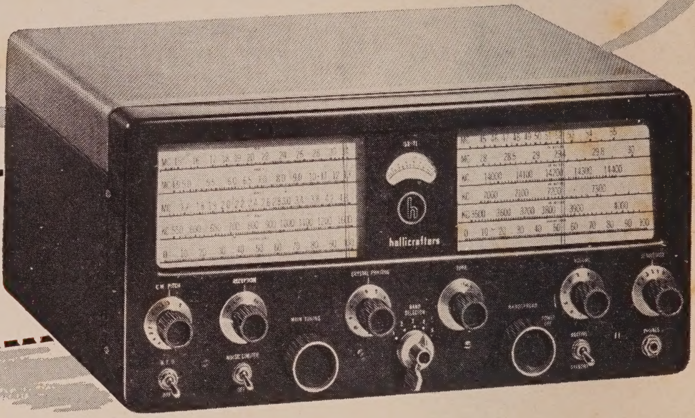
The Radio Amateurs' Journal



Published by RADIO MAGAZINES, INC. Subscription $3.00 a year

...from the HAMS at hallicrafters to HAMS everywhere...

comes this new type of receiver the HAM WORLD has been waiting for!



SX-71
$179.50

First announced last summer, then checked and rechecked with the same painstaking accuracy that a Ham would use on his own gear, this outstanding new receiver is at last ready for production.

It's a double superhet, with 2½ kc "nose" selectivity and built-in NBFM reception among its extra features. One r-f, two conversion, and 3 i-f stages provide plenty of sensitivity. Of course, it's temperature compensated and voltage regulated. And the clean-cut station separation is a dream of operating enjoyment.

It isn't a set designed to win praise from music lovers who insist on high fidelity audio. But if you are the Ham who wants *performance above all else,* here is the set for you.

Naturally, there's no use claiming that this 11-tube (plus rectifier and regulator) set is the best on the market. For several tubes and a couple of hundred dollars more, we could (and probably will sometime in 1950) build a better Ham set. But of this we are sure—now or in the future—that, considering both performance and price, the SX-71 will be in a class by itself.

During the month of December, new SX-71's will start appearing at Hallicrafters' distributors throughout the country. We'd suggest you watch for them—and examine one for yourself. Meanwhile, if you want the latest dope, write to us direct and we will be glad to send you a new "spec" sheet.

•

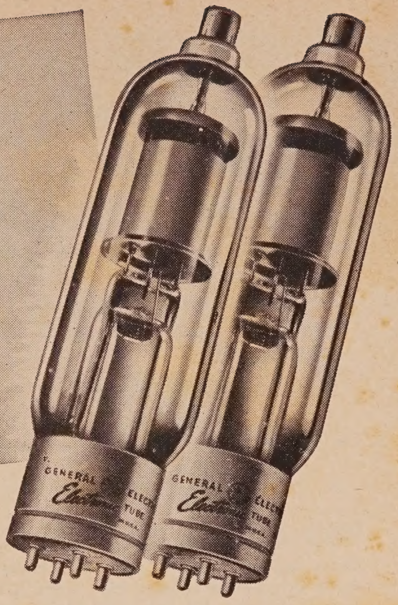
See it at your hallicrafters' dealer

the hallicrafters co.

4401 WEST FIFTH AVENUE • CHICAGO 24, ILLINOIS

RECTIFIER STALWARTS

Once you've plugged in a pair of heavy-duty GL-872-A's, you can forget them!



TYPE GL-872-A

Filament voltage	**5.0 v**
Filament current	**7.5 amp**

Typical operating conditions, full-wave circuit (two tubes), choke input:

a-c voltage, plate-to-plate	**7,070 v**
d-c output voltage (approx)	**3,180 v**
d-c output current	**2.5 amp**

SINCE the war, final input to the average ham rig has been going up. This has strained power supplies severely. Overworked rectifier tubes have a reduced life. If you replace them often, your expense mounts.

However . . . *one pair* of rectifier tubes will serve you for years if there's generous reserve capacity. Such as your margin when you can draw steadily 2.5 amperes of d-c power from a pair of GL-872-A tubes—five times the output of two GL-866-A's, for example!

With husky tubes which will sluice power like that into your rig, you needn't worry when you "double up"—i.e., ask your power supply to feed more than one stage. Or you can safely increase your rig's signal strength, knowing that your rectifier has the muscle to shoulder the extra load . . . without strain . . . without shortening tube life.

Get further facts about Type GL-872-A—big, dependable, long-serving—from your nearby G-E tube distributor. Or write *Electronics Department, General Electric Company, Schenectady 5, New York.*

Series 6 in a listing, by areas, of tube distributors who can supply you with Ham News, G.E.'s bi-monthly magazine:

Akron, O.: General Elec. Supply Corp.; Olson Radio Warehouse, Inc.; Sun Radio Co.
Canton, O.: Burroughs Radio Co.
Cleveland, O.: Northern Ohio Labs.; Olson Radio Warehouse, Inc.; Pioneer Radio Supply Co.; Progress Radio Supply; Radio and Electronic Parts; Winteradio, Inc.
Cincinnati, O.: Hughes-Peters, Inc.; United Radio.
Columbus, O.: General Elec. Supply Corp.; Hughes-Peters, Inc.
Dayton, O.: General Elec. Supply Corp.; Hughes-Peters, Inc.; Standard Radio and Electronics Products.
Evansville, Ind.: Wesco Radio Parts.
Ft. Wayne, Ind.: Pembleton Labs.; Protective Elec. Supply Co.
Gary, Ind.: Cosmopolitan Radio Supply Co.
Indianapolis, Ind.: Kiefer-Stewart Co.; Van Sickle Radio Supply Co.
Lima, O.: Lima Radio Parts Co.
Mansfield, O.: Burroughs Radio Co.
Muncie, Ind.: Muncie Radio Supply Co., Inc.; Standard Radio Parts Co.
Richmond, Ind.: Rodefeld Co., Inc.
South Bend, Ind.: Radio Distributing Co.
Springfield, O.: Standard Radio and Electronic Products.
Steubenville, O.: D. and R. Radio Supply Co.
Terre Haute, Ind.: Archer and Evinger.
Toledo, O.: Toledo Radio Specialties; Warren Radio.
Youngstown, O.: Graybar Elec. Co.; Ross Radio Co.

(*List as of September 25, 1949*)

GL-2E24 GL-2E26 GL-2E30 GL-4D21/4-125A GL-35T GL-100TH GL-203-A GL-211 GL-592
GL-802 GL-803 GL-805 GL-806 GL-807 GL-810 GL-811 GL-812-A GL-813 GL-814 GL-815
GL-826 GL-828 GL-829-B GL-832-A GL-837 GL-838 GL-1613 GL-1614 GL-1619 GL-1623

★ **ELECTRONIC TUBES OF ALL TYPES FOR THE RADIO AMATEUR** ★

GL-1624 GL-1625 GL-8000 GL-8005 GL-8012-A GL-8025-A 5R4-GY GL-816 GL-866-A
GL-872-A GL-8008 GL-1L32 GL-1L21 GL-1L36 GL-1L38 GL-1L33 GL-1L31 GL-1L25
GL-1L22 GL-1L23 GL-1L24 GL-2C40 GL-2C43 GL-2E24 GL-2E26 GL-2E30 GL-4D21/4-125A

GENERAL ELECTRIC

180-HA6

AC-405 - CR-1744 - AC-406 - CR-1728 - AC-407 - CR-1745 - AC-408 - CR-1741 - AC-409 - CR-1740 - AC-411

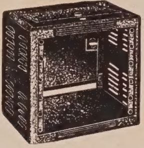
- CR-1739 -

BUD HAS YOUR NUMBER IN CABINETS AND RACKS

- CR-1743 -

AC-402 - CR-1740 - AC-403 - CR-1742 - AC-421 - CR-1739 - AC-404 - CR-1743 - AC-422 - CR-1727 - AC-425

In response to wide spread demand Bud has now augmented its already large line of Deluxe Cabinet Racks and Aluminum Chassis by the addition of several new sizes. The table below lists these new sizes as well as the old ones. Now, more than ever, Bud is able to meet your needs in sheet metal as well as other radio and electronic components.



BUD DELUXE CABINET RACKS

These cabinet racks have rounded corners and attractive red-lined chrome trim. There is a recessed, hinged door on the top with a snap catch. These racks are made of heavy gauge steel and are of sturdy construction. The five large sizes have a hinged rear door, while the small sizes have a welded panel in the rear.

Adequate ventilation is assured by means of louvered sides and a two inch opening in the bottom of the back extends the entire width.

"NO SCRATCH" EXTENDED METAL FEET ARE EMBOSSED ON THE BOTTOM TO MINIMIZE MARRING OF A TABLE TOP. Racks are furnished in either black or grey wrinkle finish. Depth 14¾", width 22". Will fit standard 19" panels.

Catalog No.	Overall Height	Panel Space	Shipping Wt.	Dealer Cost
CR-1741	10 9/16"	8¾"	29 lbs.	$10.05
CR-1740	12 5/16"	10½"	31 lbs.	11.32
CR-1742	14 1/16"	12¼"	32 lbs.	12.25
CR-1739	15 13/16"	14 "	36 lbs.	13.85
CR-1743	19 5/16"	17½"	40 lbs.	16.77
CR-1727	22 13/16"	21 "	45 lbs.	18.00
CR-1744	28 3/16"	26¼"	50 lbs.	19.20
CR-1728	33 5/16"	31½"	55 lbs.	21.20
CR-1745	36 13/16"	35 "	60 lbs.	21.57

BUD ADD-a-RACK SERIES

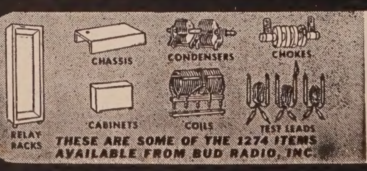
Write for literature on this newest Bud product. Find out how you can get more panel space in less floor area at lower cost.

BUD ALUMINUM CHASSIS

The construction and design of these chassis is exactly the same as our steel chassis. The aluminum chassis are welded on government approved spot welders that are the same as used in the welding of aluminum airplane parts. The gauges in table below are aluminum gauges. As a result, you can depend on BUD Aluminum Chassis to do a perfect job. Etched Aluminum finish.

Catalog Number	Depth	Width	Height	Gauge	Dealer Cost
AC-402	5"	7"	2"	18	$ .69
AC-403	5"	9½"	2"	18	.81
AC-421	5"	9½"	3"	18	.89
AC-404	5"	10"	3"	18	.99
AC-422	5"	13"	3"	18	.98
AC-405	7"	7"	2"	18	.81
AC-406	7"	9"	2"	18	.90
AC-407	7"	11"	2"	18	.96
AC-408	7"	12"	3"	18	1.14
AC-409	7"	13"	2"	18	1.02
AC-411	7"	15"	3"	16	1.68
AC-423	7"	17"	3"	16	1.43
AC-424	8"	12"	3"	16	1.38
AC-425	8"	17"	2"	16	1.52
AC-412	8"	17"	3"	16	1.77
AC-413	10"	12"	3"	16	1.44
AC-414	10"	14"	3"	16	1.92
AC-415	10"	17"	2"	16	1.80
AC-416	10"	17"	3"	16	2.04
AC-426	11"	17"	2"	14	1.89
AC-417	11"	17"	3"	14	2.40
AC-418	12"	17"	3"	14	2.52
AC-419	13"	17"	2"	14	2.25
AC-420	13"	17"	3"	14	2.67
AC-427	10"	17"	4"	14	2.36
AC-428	13"	17"	4"	14	3.05

Prices are 10% higher west of the Mississippi River.



THESE ARE SOME OF THE 1274 ITEMS AVAILABLE FROM BUD RADIO, INC.

BUD RADIO, INC.

BUD

2118 E. 55th ST. • CLEVELAND 3, OHIO

CQ
The Radio Amateurs' Journal

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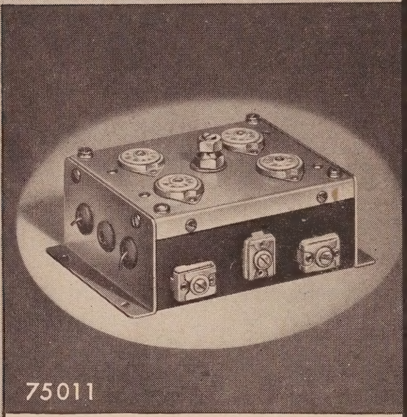
Designed for Application



The No. 75011
90° PHASE SHIFT NETWORK FOR SINGLE SIDEBAND EQUIPMENT

Push pull output for each of the phase shift channels and two input circuits makes the design applicable to *either receiver or transmitter applications*.
DIFFERENTIAL PHASE SHIFT: 90° ± 1° from 70 to 5400 cycles. Harmonic distortion at 2 volts input less than 0.5%.
FREQUENCY RESPONSE: Each network within 0.05 db. from 20 cycles to 20,000 cycles.
INSERTION LOSS: Approximately 4 db.
NORMAL INPUT VOLTAGE: 2 volts peak to peak.
POWER REQUIREMENTS: 250 to 300 volts at 50 ma. 6.3 v. at 1.2 amps.
TUBES: 4-12AT7 miniature dual triodes used as coupling tubes.
FACTORY ALIGNED: Precision resistors used in Phase Shift Networks. Capacitors accurately adjusted and sealed during factory test.
PHYSICAL SIZE: 4⅛" x 4⅜" x 2½" high less tubes. Can be mounted either in chassis cut out or above chassis.

JAMES MILLEN
MFG. CO., INC.
MAIN OFFICE AND FACTORY
MALDEN
MASSACHUSETTS

★ ★ Letters ★ ★

ZC8PM Speaks

48 West 53rd St., New York 19, N. Y.

Editor, *CQ*:

A year ago today I opened a DX factory known as ZC8PM. As you know, this factory in its brief three months of operation made many a ham happy and added some new pages to the history of *DX*.

However, along with all of this, there has ensued a windy argument as to whether or not, I had the right to pose as a new country. November *CQ*, in its DX column, had a lengthy paragraph from ZC1CL, who made reference to Arab Palestine and passed along his thoughts on the matter. Though his remarks were well-intended, I felt it was about time I spoke up and said something in defense of my position.

At present I am carrying on a correspondence with various ARRL officials regarding the problem of Arab Palestine. They have been very patient and attentive to my point of view on the situation. I have suggested that they publish our correspondence and sound out ham opinion on the subject.

Meanwhile, I would feel quite relieved if you would allow me to "let off steam" in your column. Here are the facts on Arab Palestine: First, in answer to ZC1CL, Arab Palestine *does* exist. Many months after ZC8PM closed down, the Iraq Army moved out of Nablus and the other parts of Arab Palestine they held, and handed over authority to Transjordan's army, the Arab Legion. However, this does not mean that Arab Palestine is now part of a greater Transjordan.

During the existence of ZC8PM, the Iraq Army ran the northern half of Arab Palestine, where the station was located. There was a government with mayors, judges, police, and every other agency that would ensure stability. The postal service reopened and issued their own stamps. Granted, Arab Palestine is not as wealthy or on as sound a footing as the new state of Israel, they are both new and different countries compared to old Palestine. But, strangely, Arab Palestine is not regarded as such in the country lists.

A concession has been made to the effect that Arab Palestine may still be regarded as old Palestine, but actually, to be old Palestine, Arab Palestine would still have to be governed by the British mandate that gave up the ghost in the spring of 1948. At that time the United Nations took over and tried to replace old Palestine with two *new* countries, Israel and Arab Palestine.

The argument that Arab Palestine and old Palestine are the same country because of the geographical occupation of portions of land common to both political entities is obviously impertinent. If this rule were to be applied generally, many countries would have to be replaced on the countries list as "Empire of Alexander."

One possible parallel to this situation is the problem of the propagation of the amoeba. That little creature propagates himself by splitting in two, but no sane zoologist trys to tell anyone that one of the two new amoebae is the old one.

Well, feel better now that that's off my chest. But I do wish I could work Arab Palestine from home; I still need Asia on 80.

Pat Miller, ZC8PM

Happy Christmas

BILL PETERSEN, W0JRY

PR CRYSTALS SINCE 1934

PETERSEN RADIO COMPANY, Inc.

2800 W. BROADWAY, COUNCIL BLUFFS, IOWA

HERE'S YOUR

A JOHNSON "Q" BEAM FOR MATCHING EASE, HIGH EFFICIENCY

2-Band Operation

Unsurpassed for gain, efficiency and ease of matching, the JOHNSON "Q" is a natural for beam operation on two adjoining harmonically related bands.

The beam consists of two JOHNSON "Q's" for the lower frequency of the two desired, spaced 1/5 wave and fed 180° out of phase with a 600 ohm line.

In ordering, specify two "Q" antennas for the lower frequency of the two bands desired. For example, if you want a "Q" Beam to operate on 10 and 20 meters, order two JOHNSON "Q's" for 20 meters.

On both bands, radiation is broadside, the effective lobe being 60° wide on the fundamental and 45° on second harmonic.

Get your JOHNSON "Q" Beam at your dealer's . . . or write for brochure entitled "The JOHNSON "Q" in Popular Antenna Applications."

"Q" BEAM ADVANTAGES

1. Two band operation with matched impedances on both bands. (Bands must be adjacent and harmonically related.)
2. 4 db gain on fundamental — 6db on second harmonic.
3. Requires small installation space.
4. Requires no adjustment when changing bands.
5. Uses highest efficiency open wire line.

JOHNSON

E. F. JOHNSON CO., WASECA, MINN.

Feenix, Ariz.

Deer Hon. Ed:

Merry jingly bells and loud Noels. As you are doubtless knowing, the Christmas season are fast approaching, and Scratchi, for one, are not going to be caught unawares. Last year I are receiving most terrific assortment of neckties, handkerchiefs and shaving lotion. In fact, are having so much of that stuff now that I are having to take inventory twice a year for income tax purposes.

Understand, Hon. Ed., I are not blaming all my relatives who sending me such gifts, as I are figuring that they just not knowing what Scratchi need, so they are taking easiest way out. This are where Scratchi's sooper genius are coming to fore. This year I are seeing that they all finding out exactly what I wanting.

So, with Itchi's help, I are digging around in basement and unearthing all old letters which are mentioning relatives and their addresses. I are coming from large family and are having relatives by the shipload—aunts, uncles, cousins, great-aunts and great-uncles. Some of them are not writing for several years, but I wanting to have complete list so not to missing any bets.

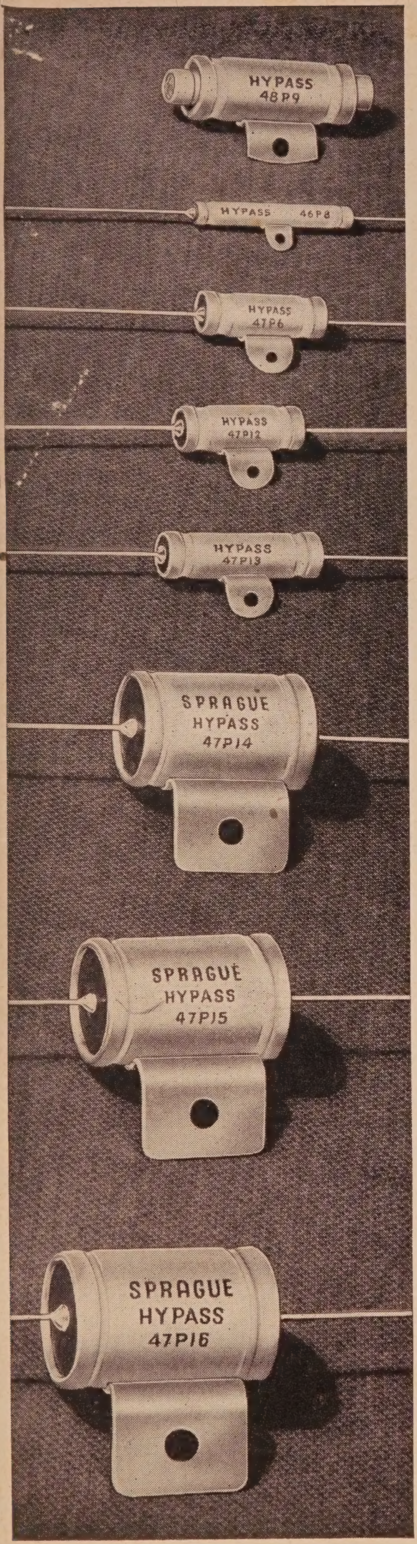
Next step are to writing letters to them. Of course I are not just writing and telling them what I want for Christmas, this being too obvious. No, Scratchi are being reel slicky. Taking for examples one letter:

"Dear Great-Uncle Fujiama and Great-Aunt: A thousand heavenly greetings from your lowly great-nephew Hashafisti. Many moons have passed since I have had the pleasure of your company. How is the health of all the little Fuji's and how are all my friends in Osockme?" (Scratchi are going on like this for several paragraphs, then:) "As you are knowing, Scratchi are Hon. Radio Amateur, and I are having reel funny experience other day. I are on air, talking to friend in Oklahoma, when all of a sudden big puff of smoke are emanating from side of transmitter. Well, you would never believe it, but my beautiful plate transformer (Osockme Scrap Iron and Transformer Company No. PT637½, with light gray finish) are no longer for this world.

"Well, this are natchurly breaking old Hashafisti's heart, but I are no doubtless able to save enough money in a year or so to buying new one. Until then, greetings from your forlorn nephew Hashafisti".

Ho, Ho, Hon. Ed., aren't that sooper? I are laying it on so thick it are hard to getting letter in envelope. And you should seeing the other eleven-teen letters I are writing. In each one Scratchi are telling about how some piece of radio equipment are going on the blink. In my

(Continued on page 50)



SPRAGUE

HYPASS® CAPACITORS

ELIMINATE TELEVISION INTERFERENCE PROBLEMS

★Sprague Hypass Capacitors are an exceptionally effective means of by-passing harmonic currents in short-wave transmitters and for eliminating conducted h-f interference from power lines and control circuits. They are also used to eliminate TVI caused by line interference conduction between neighboring television receivers.

★Unlike conventional bypass capacitors which are self-resonant at relatively low frequencies and are consequently ineffective for v-h-f filtering and by-passing, Sprague Hypass feed-thru capacitors do not exhibit a resonant frequency if properly connected. Instead they simulate a lossy transmission line with effective broad-band attenuation. This property is the result of an exclusive Sprague internal design, originally developed especially for critical h-f and v-h-f radio frequency interference problems in the military service.

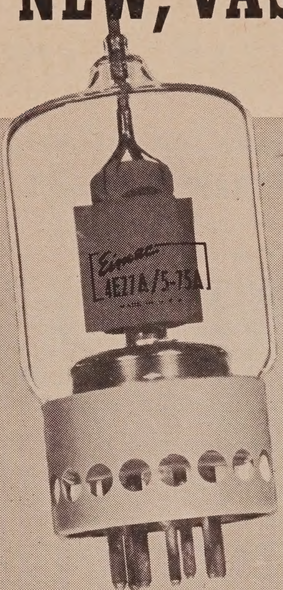
★The high-voltage d-c Hypass Capacitors were developed especially to meet transmitter needs outlined by ARRL Headquarters. The circulating current to ground at 14 and 28 mc should not exceed 2 amperes for Types 47P15 and 47P16, 3 amperes for Types 47P13 and 47P14, and 4 amperes for Type 47P12. The Type 48P9 .1 mfd., 250 v a-c unit is recommended particularly for power line, filament and control circuit applications up to 20 amperes line current. In most cases, it is far more effective than an ordinary choke-capacitor filter.

Catalog Number	Mfd.	Working Voltage	Size Diam. - Length	List Price
48P9	.1	250 a-c	11/16 x 1 13/16	$2.60
46P8	.005	600 d-c	1/4 x 1 5/8	2.15
47P6	.01	600 d-c	7/16 x 1 1/4	2.35
47P12	.005	1000 d-c	7/16 x 1 1/4	2.40
47P13	.01	1000 d-c	7/16 x 1 1/2	2.60
47P14	.005	2500 d-c	1 x 1 9/16	2.90
47P15	.01	2500 d-c	1 x 1 9/16	3.10
47P16	.002	5000 d-c	1 x 1 9/16	3.20

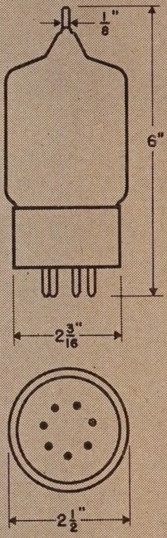
SPRAGUE PRODUCTS COMPANY

North Adams, Massachusess

A NEW, VASTLY IMPROVED 4E27



- MORE RUGGED PLATE-LEAD
- PYROVAC PLATE
- OVERSIZE PLATE
- NON-EMITTING GRIDS
- MECHANICALLY RUGGED
- MOULDED-GLASS HEADER
- LOW-LOSS LEADS
- EASILY COOLED STEM



EIMAC PENTODE
TYPE 4E27A/5-75A

Encompassed in the structure of this new version of the 4E27 are many outstanding improvements that now will guarantee performance-dependability to users of this tube type.

The plate-lead of this new Eimac 4E27A/5-75A pentode is of larger diameter than the protype* providing a low-loss, low inductance, more rugged lead. The plate itself is larger assuring a good reserve dissipation capacity above its 75 watt rating. It is made of Eimac Pyrovac plate material, which lengthens the life of the tube and enables it to withstand high momentary overloads.

Primary grid emission has been eliminated and secondary characteristics stabilized through the use of Eimac processed grids. Perfected beam-action and permanent alignment are assured through well engineered internal-element mounts.

The unique moulded-glass header eliminates a base on the 4E27A/5-75A. This simplifies lead cooling, minimizes lead losses, and provides precision alignment of base-pins.

The stability and high power-gain characteristics of this new Eimac pentode make it an excellent VHF or video power amplifier. It is equally well suited for conventional power amplifier service.

Further information and detailed characteristics concerning this latest product of Eimac engineering research may be had by writing the Application Engineering Department of Eitel-McCullough, Inc.

* Lead connector is supplied to make this new tube directly interchangeable with 4E27.

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EITEL-McCULLOUGH, INC.
San Bruno, California

EXPORT AGENTS: FRAZAR & HANSEN, 301 CLAY ST., SAN FRANCISCO, CALIFORNIA

Follow the Leaders to
Eimac REG. U. S. PAT. OFF.
TUBES

ZERO BIAS

EDITORIAL

THE FCC'S ORDER OF OCTOBER 13TH, which cautioned U.S. amateurs against communicating with hams located in Austria, Burma, French Settlements in Oceania, Greece, Indo China, Indonesia, Iran, Israel, Lebanon, Madagascar and dependencies, Mauritius, S. Pierre & Miquelon, and the portion of Togoland under French trusteeship, seemed to us, at first, to be nothing more than the implementation of Article 42, § 1, of the Radio Regulations of Atlantic City, which states:

> *Radiocommunications between amateur stations of different countries shall be forbidden if the administration of one of the countries concerned has notified that it objects to such radiocommunications.*

In other words, countries who wish to prevent *their* amateurs from contacting hams of other countries are provided with a tool whereby the hams of *other countries* can be prohibited from communicating with the hams being so regulated.

It became apparent, after this order had been on the books for a few days, however, that the foreign countries concerned had not been diligent in enforcing the prohibition on *their own* amateurs. We heard 4X4s, OEs, and the rest of them calling "CQDX" and freely QSOing other hams throughout the world. The FCC's order, which had been issued by the Commission in good faith, was obviously not the complement of the official acts of the radio administrations of the countries concerned, and U.S. amateurs were being placed in a position which was, to say the very least, artificial.

Observing the situation as it stood, we sent the FCC a telegram outlining our feelings in the matter and received the reply which is reproduced, together with our original message, on page 35 of this issue. We note that DX Editor Becker, W6QD, the Potomac Valley Radio Club, Frankford Radio Club, Northern California DX Club, and SARA gave us a strong "assist" on this affair.

The Commissions' new order, issued on November 4th, reads:

> *Amateurs and all others concerned are hereby authorized by the Commission to disregard, until further notice, the Commission's Public Notice (41636) dated October 13, 1949 reproduced on the reverse side hereof.*

The spectre has been laid — for how long we do not know—but you may be sure that our friends on the Commission, including George Sterling, W3DF, Red Rollins, W3GA, and Bob Percy, W4IQR, are watching out for our interests.

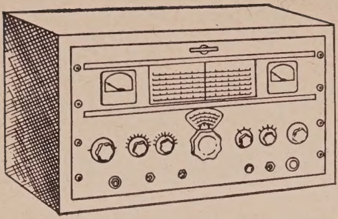
Washington, October 10, 1949

Two items of major importance in the controversial FCC proposals for changes in the amateur regulations, the creation of the Novice and Technician Classes of amateur operator licenses, which have been championed in these pages by our predecessor, W2IOP, appear about to become the law of the land. We believe that the strong position Larry took, not only here but also in conferences and discussions in many arenas, contributed mightily to the wave of amateur opinion which has swept these new Classes to the brink of enactment.

What many amateurs had expected would turn into a bloody battle among representatives of the various groups which speak for the several factions of amateur radio, the FCC's Informal Engineering Conference, had become a perfect "meeting of the minds" by 1:50 P. M., when NARC and SARA had each announced their endorsement of ARRL's stand on the proposed changes in amateur regulations which the Comission first presented last April. The League's stand on the specific proposals themselves—discounting the question, for the moment, of the Comission's legal right to propose such a set of regulations—had been decided at a special meeting of the ARRL Board on October 8th as follows: 1) Recommended an extension of the 75-meter Class A phone sub band to include 3800 to 4000 kc; 2) Rejected the FCC's idea of bandwidth limitations on this or other phone bands; 3) Rejected all FCC proposals relating to changes in the 14-, 28-, and 50-mc bands, except approved the extension of NBFM throughout the range 50-54 mc; 4) Recommended the creation of Technician and Novice Classes of amateur license, with the requirement of a 5 w.p.m. code test and distinctive calls for these classes, with Technician class operation restricted to the frequencies above 220 mc and Novice operation restricted to the bands 3700-3750 kc and 26.96-27.23 mc, c.w. only, and 145-147 mc, c.w. or phone; 5) Expressed strong opposition to the proposal to require reexamination of present Class A licenses as a condition for continuance of their present privileges, and also to the proposed 20 w.p.m. code test for new Class A licensees.

These actions of the Board were the subject of a very complete 32-page presentation which examined all aspects of each of the FCC's proposals, including ARRL's "understanding of the problem and the objectives of the proposal," and, further, "comment as to the *necessity*, if any, of the proposed regulation." The scope of the League's

(Continued on page 34)



TVI...

a challenge to the future of ham radio!

THE widespread and eager acceptance of television has imposed on the amateur fraternity a new problem of major proportions. Elimination of TVI, as has been explained in QST and CQ, is very difficult due to the harmonic relationship of amateur and TV frequencies, poor selectivity and spurious responses prevalent in many TV receivers and, generally, to the enormous power ratio which must be achieved between desired and undesired output frequencies in an amateur transmitter. Collins Radio, in keeping with its policy of building fine amateur gear, has modified the design of the 32V transmitter to meet the TVI problem. Extensive laboratory development, tests conducted cooperatively with one of the leading TV receiver manufacturers, and field checks in a large number of actual ham installations have shown that the new model (32V-2) is an effective answer to its TVI problem.

At the present time, due to occasional unusual field conditions, we are unable to make a flat statement that the 32V-2 is TVI proof, yet our field tests have shown no TVI in over 97% of the cases. Therefore, we are authorizing our dealers to offer full refund of the purchase price of a 32V-2 returned in new condition, transportation prepaid, within 30 days if the amateur is not satisfied with its freedom from television interference.

We hope that the 32V-2 and this money-back policy will enable many amateurs to continue their enjoyment of ham radio with increased interest.

We are proud of the job we did with 32V-2. As you can imagine, we could not rely on specific measures which might be effective in one case but would not suffice in others. Instead we attacked the problem on a broad front. You might be interested in the way we did the job:

First of all, we modified the tuned circuits in the exciter and output circuits to attenuate greatly not only harmonics but also subharmonics and other spurious frequencies which might cause trouble in a TV receiver. We found that stray r-f around the station equipment is best cleaned up by using 52 ohm RG8-U coax for all transmission lines inside the ham shack. For those amateurs who want to use two-wire open line to their antenna we have developed the 315E-1 Balun Transformer kit which is installed as part of the outdoor transmission line. This ingenious device transforms a 300 or 500 ohm balanced line to 52 ohm coax before the line enters the shack and requires no adjustment when operating on any frequency from 7 to 29.7 mc. Balance is preserved and "flat" or tuned feed systems can be employed without the use of an antenna tuner.

A second reason for standardizing on 52 ohm coax output was to facilitate the use of the 35C-1 external low pass filter which adds over 75 db of attenuation to harmonics in the TV range. The 35C-1 Filter is an accessory priced at $40.00.

For especially difficult cases where a very susceptible TV receiver is to be used alongside the 32V-2 we can supply the 49S-1 cabinet at extra cost. It has very tight shielding, forced air circulation and extra filtering of external lead wires. In most cases the 49S-1 cabinet is not required.

General amateur performance of the 32V-2 has been enhanced rather than compromised by these TVI measures. We invite you to enjoy better ham radio and freedom from TVI with the 32V-2.

FOR SUCCESS IN AMATEUR RADIO, IT'S . . . COLLINS

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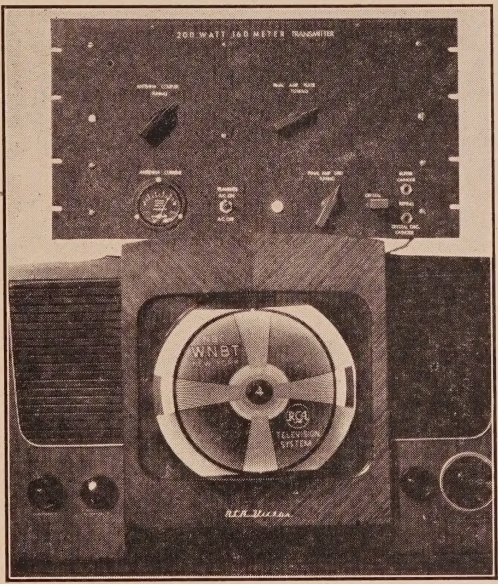
TVI on 160 Meters?

PHILIP S. RAND, WIDBM*

Escaping from television interference on 160 is easier than on any other band—but the good design it takes is a new experience for "short lead" experts. Here is how it's done.

With the opening of the 160-meter band the $64 question in the minds of the 10-meter gang was: "Can I operate on 160 without TVI?" The answer is "yes" provided you take a few simple precautions. These so-called "TVI precautions" will undoubtedly soon become standard practice in the design and construction of all new pieces of gear.



Nearly 8 amps in the antenna and look at the TV screen!

The generation and radiation of harmonics has always been a nuisance to the amateur; however, with the advent of TV it has become a major problem. After completing and placing in operation the transmitter to be described, one of our first contacts was with a station whose problem was not TVI but rather an S9 phone 2nd harmonic on 3.6 mc as compared to an S6 fundamental on 1.8 mc. Listening around the band turned up several 160-meter phones running around 35 watts who were overheard saying that they took out all the low channels on their own TV sets as well as their nearby neighbors. Of course, if they had been running 200 watts they would have caused considerably more TVI.

The mere fact that the rig is on 160 has nothing to do with the generation of harmonics. As a matter of fact, the harmonics are apt to be considerably more troublesome due to the usual long leads, half-hearted bypassing, and haphazard layout of junk box parts used on this band.

Inasmuch as the average amateur does not have a 160-meter rig ready to go and it is not good practice to try to use a 10-meter rig on these low frequencies, it was thought advisable to start off from scratch to design and build the rig.

Let me point out here why it is not good practice to put a 10-meter rig on 160 meters. If the 10-meter rig has been cleaned up for TVI leave it alone—don't mess with it. Don't try to use it on all bands or you will be struggling with TVI all the time. You need harmonic plate traps for 10 meters but you don't for 160. You need small bypass condensers on 10 and large ones on 160. You need physically small tank condensers on 10 and large ones on 160. In other words, the two just don't go together. Don't get me wrong—I have often used the same rig on both bands and worked plenty of stuff, but that was before TVI entered the picture (no pun intended). It is conceivably possible to do it even now, but I am firmly convinced that's doing it the hard way. It is much more conducive to low blood pressure and friendly neighbors to have two separate r.f. sections. Your modulators, key, power supplies and meters, of course, can be common to both rigs. You select whichever rig you wish to use simply by turning on the filaments of that unit. All the power cables, etc. are tied together in parallel.

Circuit Design

In the interests of simplicity the following requirements were set down for a 200-watt 160-meter rig.

1. Must not have harmonic plate traps.
2. R.F. must be mounted on one standard 17" x 13" x 3" chassis.
3. No more than three tuning controls.
4. Should be crystal controlled because bands are narrow.
5. Must be stable and free from parasitics.
6. Must be capable of complete shielding.

**RFD 1, South Norwalk, Conn.*

7. Must have built-in suppression ot all harmonics.
8. All power leads leaving chassis must be free from r.f., both fundamental and harmonics.
9. Provision must be made to hold screen voltage on 813 down.
10. It must not cause TVI to a nearby receiver.

After looking over the available TVI literature and studying the above ten requirements it appeared that here was an excellent chance to build a rig from scratch with an entirely different layout, different parts, different frequency, single-ended instead of push-pull, etc., and see if the general principles of TVI elimination would hold.

Figure 1 shows the original circuit diagram that was drawn up and used without change. It consists of a 6AG7 as a Pierce crystal oscillator followed by another 6AG7 as an untuned buffer stage. These tubes were selected because of their excellent internal screening and their power handling ability. So far we have no tuned circuits, only r.f. chokes, resistors and bypass condensers. For the final amplifier an 813 was chosen although a 4-125A would work just as well if available. The final is tuned-grid and "double-tuned" plate. This "double-tuned" plate circuit is one of the important parts of circuit[1] and is otherwise known as a harmonic filter or an antenna coupler.

The grid circuit of the 813 has a 100-μμf mica condenser to bypass harmonics from grid to cathode while the plate circuit has two 50-μμf vacuum condensers in parallel from plate to cathode. The suppressor grid is tied directly to ground while the screen grid is bypassed with a .0035 mica. The two filament connections are returned to ground by two .01 mica condensers. In other words, all the elements of the 813 are bypassed to a common point on the chassis by at least 100 μμf. The leads connecting these condensers from the tube to the common point are all copper strips ½" wide. The suppressor grid is grounded in this fashion.

The tuning condensers in the grid and plate circuits are both 100-μμf jobs with the coils pruned so that they tune to 1.8 mc with full capacity. The condenser in the harmonic filter has a total of 330 μμf and it tunes to resonance at about 200 μμf.

The next TVI precaution is the filtering of the power supply leads before they leave the chassis. A clear space was reserved to one side of the underpart of the chassis and a 2½-mh RFC plus an Ohmite Z-1 were placed in each lead except the 117 v. a.c. line where some homemade chokes were placed. Each end of each RFC was bypassed to ground with whatever condensers were handy, mostly around .001 to .005 μμf and each prong of the output cable socket was bypassed with a similar condenser.

Several methods of holding the screen grid volt-

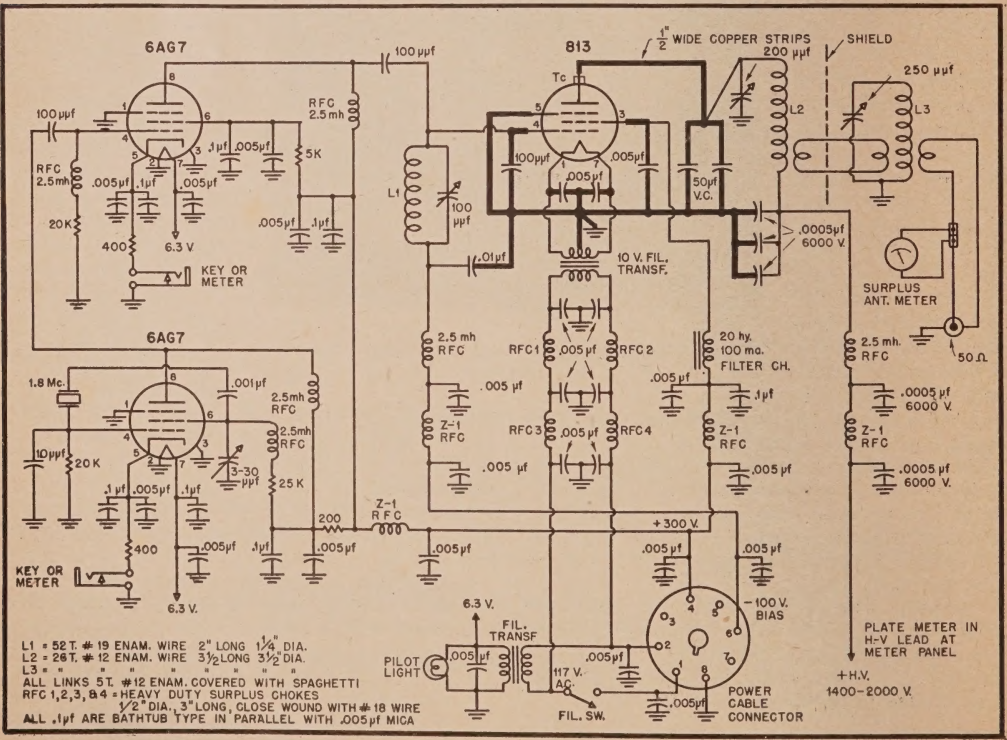


Fig. 1. Circuit diagram of the complete TVI-free 160-meter transmitter.

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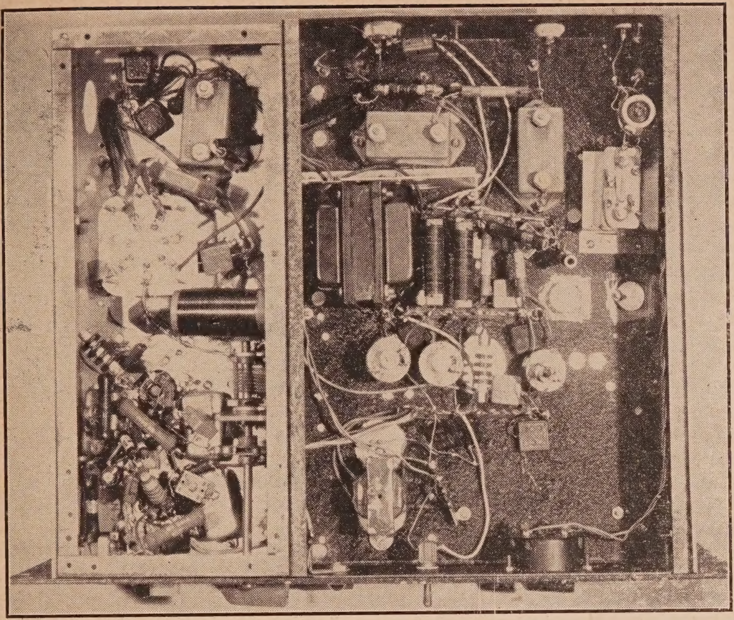
[1] Rand, "The Little Slugger," QST, Feb., 1949.
Rand, "Cure Your TVI—Three Easy Lessons," *CQ*, May, 1949.



Bottom view of the complete transmitter. Parts have been selected at random from the junk box.

age down while tuning up and in case of excitation failure were considered. It was finally decided, however, to simply put the 300-volt exciter plate voltage on the screen and isolate it, as far as audio frequency was concerned, with an a.f. choke. For this purpose a filter choke of 20 henries rated at 100 ma was used.

In the interest of reduced harmonic generation the grid bias was held to —100 volts, near the Class B value, and was obtained from a bias power supply. The grid current was held down to 10 ma for the same reason.

Construction

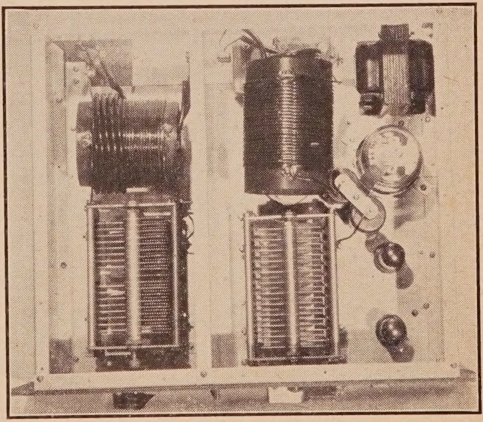
In the construction, junk box and war surplus parts were used as much as possible. The chassis was made by bolting two old chasses together and covering the top with a piece of aluminum 14″ x 17″. The old chasses were 5″ x 14″ and 11″ x 14″ respectively and were pretty well punched up with socket holes each having been used three or four times before. The final result worked out very well, however, providing a shielded space of 5″ x 14″ x 3″ for all the r.f. components for the exciter and 813 grid while the remaining space was used for the harmonic filtering r.f. chokes, screen grid a.f. choke, and 6.3-volt filament transformer.

Due to its size, the 813 filament transformer was mounted on top of the chassis to the rear of the 813 and as close as possible so that the filament leads and center tap connection could be as short as possible. The filament transformer is a bad actor as far as harmonics go and therefore requires special treatment. The 117 v. a.c. feeding this transformer is fed through two r.f. chokes of heavy wire obtained from a surplus rig (BC-375) and two homemade r.f. chokes. These consist of a close-wound coil on a ½″ diameter wooden dowel 3″ long of No. 18 enamel wire. All the r.f. chokes and their respective bypass condensers are mounted between the tie points of three long terminal strips in the center of the 11″ x 14″ x 3″ chassis.

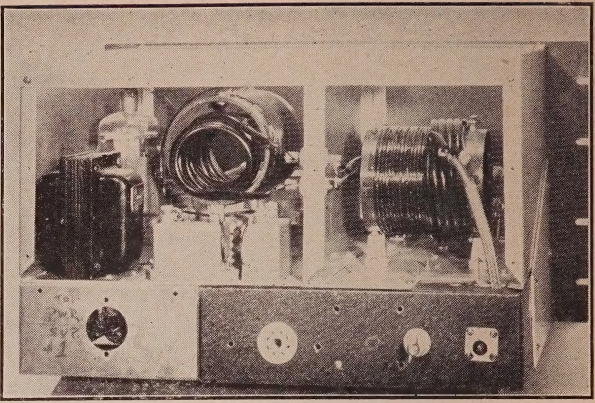
The thermo-couple for the r.f. ammeter is mounted in the rear corner of the chassis directly under the antenna link and about an inch forward of the output coax connector. This meter is one obtained from an SCR-274 antenna box, the one that you get with the 50-$\mu\mu$f vacuum condenser.

Shielding

From past experience it was deemed advisable to lay out the rig mechanically so that it could be completely shielded, as it has been found that many



Top view of the transmitter. The 813 and driver stages line the right-hand edge of the chassis.



Rear view of the transmitter and antenna coupler.

TVI precautions are not completely effective unless this is done.

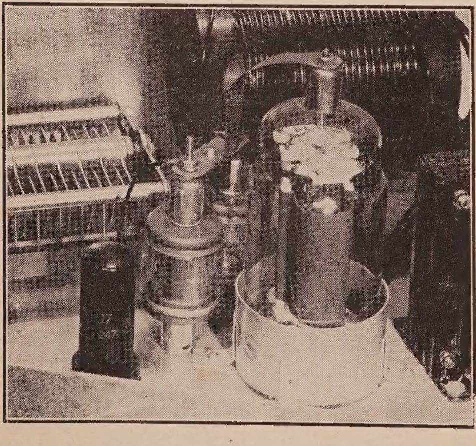
Due to the copious amount of heat developed by an 813 running at 400 watts, it was decided to use copper screening for the bottom pan as well as the top and rear. The two ends and the center partition are made of aluminum sheet 1/16" thick and have a ½" lip folded over on all four sides. The dimensions are 14" x 7". This gives us ½" clearance at the top when used with a 10½" standard relay rack front panel, and the entire rig fits into an enclosed relay rack nicely providing an excellent job of double shielding. The three vertical partitions are tied together at the top, front, and rear edges by 1" x 1" aluminum angle which make a rigid job with plenty of places to screw on the copper screening. The copper screening should have its edges tinned with solder. All shielding should be overlapped at least ½" or more at joints.

In the interest of economy the plate coil and the output coil were wound with No. 12 enamel wire on some old bakelite forms 3½" in diameter and 5" long that first had to be cleaned of an accumulation of 15 years of dirt and grime. Of course new coils may be purchased if desired or existing 80-meter coils may be used. If you buy 160-meter coils you probably will have to strip off half the winding to get the proper *L/C* ratio. Since the advent of TVI, the author has used 40-meter coils for 80, 20 meter coils for 40, etc., by adding extra capacity in the form of vacuum condensers.

The coils in this 160-meter rig may be made "plug-in" if desired so that the rig may also be used on 80. This was not done in this case because of the added expense and because we already had an 80-meter rig.

The two tuned circuits in the plate of the amplifier are shielded from one another by the center partition; however, they are coupled by means of two five-turn links on the inside of the coils. These links are wound with No. 14 enamel wire covered with spaghetti tubing and are of a diameter to fit loosely inside the 3½" diameter bakelite coil forms at the cold end of the tank coils. The output link going to the antenna is wound in the same fashion except it is on the outside of the output coil also at the cold end. The grounded end of the output link is grounded right at the coax connector, not up at the coil.

The two five-turn links coupling the two tank circuits together have no ground connection and are mounted on their own pigtails to the opposite ends of two feed-through insulators, salvaged from the SCR-274 antenna unit previously referred to, which pierce the rear of the center dividing partition.



813 PA, showing the two 50-μμf vacuum condensers tied in parallel from plate to ground.

Tune Up Procedure

In tuning up the rig for the first time it is advisable temporarily to connect a 5-ma meter in the cold end of the grid resistor of the 2nd 6AG7 so that the crystal oscillator 3-30 μμf feedback condenser can be adjusted for proper oscillation. A setting of this condenser should be found so that there is no tendency for oscillation with the crystal removed and yet with the crystal plugged in you should have from 2 to 3 ma grid current on the 6AG7 buffer stage.

Plate and screen voltage should now be applied to the 6AG7 buffer and the grid current checked in the 813. This should be about 10 ma when the grid condenser is tuned to resonance.

If everything checks okay so far, apply 300 volts to the screen and about 500 to the plate of the 813 and tune the 813 plate tank to resonance as indicated by minimum dip in plate current. The 100-μμf plate tank condenser should be 95% meshed, if a crystal near 1805 kc is used. Next tune the output tank for resonance as indicated by maximum plate current and maximum antenna current. The output link inside the

(Continued on page 60)

A Rack and a Beer for a Fin

D. S. TRAER, W4AZK*

How one ham licked his dollar shortage and ended up with a "six-foot" rack.

Eighteen dollars net." That was the unencouraging response received from the local radio store in answer to the question regarding the cost of a six-foot relay rack. The problem of smuggling $18.00 out of the weekly pay check from the XYL was definitely out—and how! Phone calls to local iron works and junk yards brought the disappointing news that the total cost of angle or channel iron for such a rack was still above the ten dollar mark, not even considering the strenuous labor of welding, drilling and tapping.

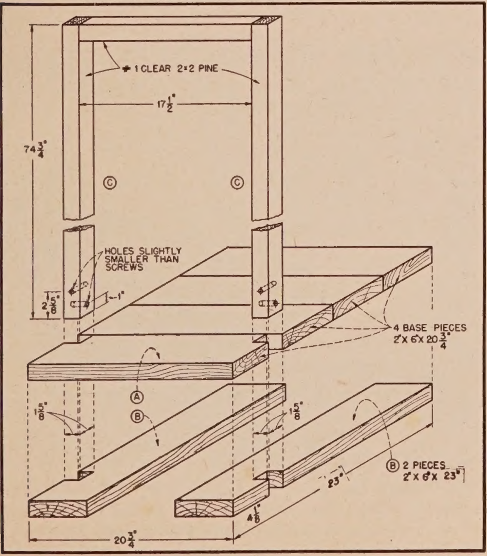
Since necessity is the mother of invention, the following design was worked out on paper, and the lumber company called. Eureka—$3.26 was the figure plus another dollar for necessary screws and bolts. The household saw, hammer, screwdriver, hand drill and bits, a square, and less than two hours carpentry brought forth considerable satisfaction and kept that folding green in the left rear pocket.

All lumber used was #1 clear pine. Required are sixteen feet of 2 x 2; ten feet of 2 x 6; eight feet of 1 x 2; twenty-two #10 2½″ flat head galvanized wood screws and, in this case, twenty SAE machine bolts 2 x ¼ with washers. The number of machine bolts required will depend upon the number of front panels the individual anticipates using. First, cut off four pieces of 2 x 6 exactly 20¾″ long and two pieces 22½″ long. Next cut two pieces of 2 x 2 74¾″ long and one piece of 2 x 2 17½″ long. The exact size of dressed lumber is 1⅝ x 1⅝ for 2 x 2; 1⅝ x 5¾ for 2 x 6. From one piece of **2 x 6 x 20¾″, cut a 1⅝″** square from the two corners **as shown in *Fig. 1,*** part *A*. From the two **22½″ pieces of 2 x 6, cut** one 1⅝″ square in the side **of each exactly 4⅛″** from the end, as shown **in *Fig. 1,* part *B*. Then,** drilling *with* the grain, **make one hole in each of the** 74¾″ 2 x 2s one inch **from the end. This hole is** slightly smaller than the **wood screws to be used.** Two more similar holes are drilled ***through*** **the** grain, 2⅝″ from the **same end. These holes will** be at right angles to each **other, 1⅝″ apart.**

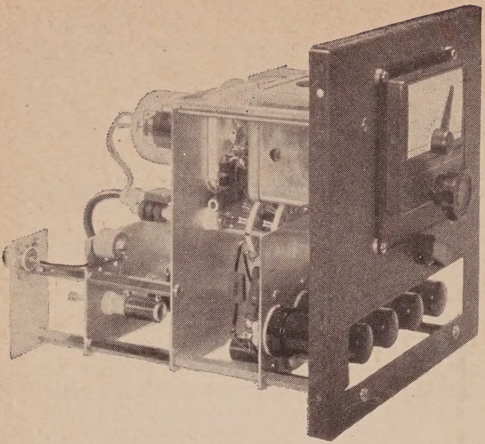
Place the uprights, **(2 x 2s) designated as *C*,** in the squares cut from boards *B* and screw into place. Then place board *A* across the ends of *B*, tightly fitting the square notches against the uprights, and drive the other two screws home. Securely screw board *A* to *B*. Now fill in the rest of the base with the other three pieces of 2 x 6 x 20¾. Fit the 17½″ of 2 x 2 flush with the top of the uprights *C* putting two screws in each end. The 1 x 2 inch braces are then attached approximately two and a half to three feet up on the sides of the uprights *C*. Then securely screw the other ends to the rear sides of the base.

During this process be sure that the frame is squared. Quarter inch holes may now be drilled in the uprights at regular intervals as in any standard relay rack or only those holes drilled that are necessary for the number and size panels the individual wishes. In any case, these holes are drilled ⅜″ from the inside edge of the uprights. Beginning 5/16″ from the bottom, drill the second hole 1¼″ from the first. The third hole is drilled ½″ from the second and the fourth hole 1¼″ from the third, etc. Fifty cents worth of black enamel finishes the job at a total cost of $4.76.

As a precautionary measurement, quarter inch soldering lugs were obtained from the junk box and a #10 wire run down each back side of the uprights. At least one lug on each side of each panel is secured under the washer of that mounting bolt. Of course these wires are run to an earth ground at the base of the rack. In order to dress up the rack, after the panels are all in place, one may obtain 1½ x 1½-inch square moulding and mount on the outside edge of the uprights such that it covers the quarter inch mounting bolts.



**2536 NW 24 St., Miami, Fla.*



One tuning control and the utmost in accessibility are the high points in the design of W1COJ's contribution to the ever-expanding field of exciter design. The use of an 829B in the output stage ensures adequate power-handling capability while still keeping the overall size within reason.

●

OWEN J. McCABE, W1COJ*

●

The Latest in Exciters

Here's how the boys in Connecticut free themselves from the tyranny of chassis-and-panel construction and come up with gadgets that work even better than they look.

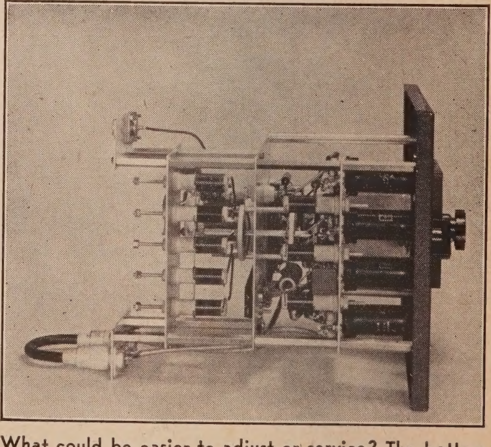
THE COMPLEX AND EXTENSIVE WORK that is usually required to build and de-bug amateur equipment such as a band-switching single-control exciter has been one factor, it is felt, in the gradual drift of the amateur toward the physically, if not financially, easy road of purchased commercial equipment. Certainly it is possible, if the trend continues, for the amateur to become just the operator, as the BCL is, of manufactured equipment.

With a view toward encouraging home construction, the device to be described is a result of a year's work of "build up and tear down" in an effort to attain a maximum in circuit and mechanical simplicity. It is an axiom in electronic work that the end is never in sight as far as improvement is concerned, so there are no doubt many shortcomings that will appear to readers. However, this exciter is compact, uses few parts and controls, handles like a receiver, and is easy to build. The basic operation is that of a 1.75-to 2-mc permeability tuned oscillator, similar to the Collins 70E-8, coupled to a buffer and consecutive broad-band doublers, any one of which can be coupled to a push-push broad-band harmonic output stage. It will be noted from the above that there is only one stage in which the grid and plate circuits are on one and the same frequency. This is the 2-mc buffer. The plate circuit of this stage, however, has practically a non-resonant load and the very low r.f. output voltage of the oscillator allows Class A operation.

It is the experience of the writer that straight amplifier operation of any modern high-transconductance pentode will not yield complete stability nor will it allow the duplication of a model unless one resorts to difficult shielding, trick circuits, traps, etc. Multiplier operation in this exciter avoids many of the usual problems and still provides adequate grid drive in all stages.

In the course of development of the multiplier section the writer at one time was able to apply a large amount of r.f. inverse feedback across each stage. While this circuit did provide a bandwidth of about 2 mc in each stage, the idea was discarded because the multiplier section passed spurious harmonic frequencies too well. This, in view of the TV situation, was obviously not the thing to do.

Another investigation that took some time was



What could be easier to adjust or service? The bottom view illustrates how much can be gained by tailoring the structure to fit the circuit.

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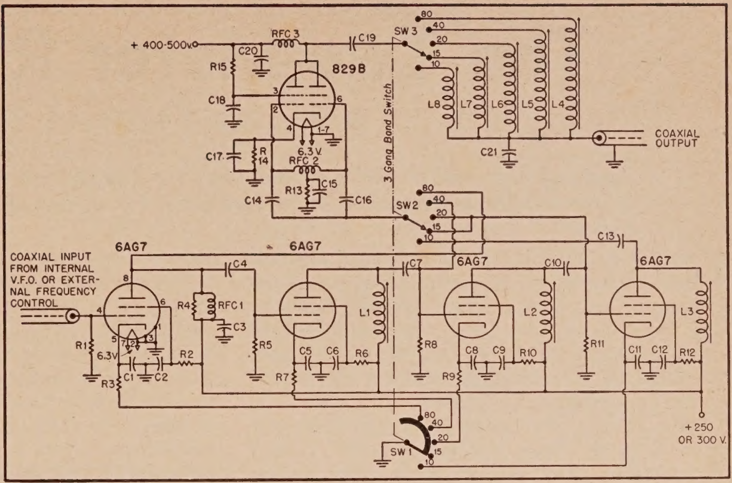
*Beleden Garden Drive, Bristol, Conn.

the selection of the slug tuned forms for the various stages. Originally a CTC form was used for this purpose. The iron slug was removed and a brass one substituted. However, the dielectric characteristics of the form, which was bakelite, were poor, with resultant low r.f. voltage developed across the coil. The writer then found some coil forms of the surplus variety made of steatite which, with a little work, performed excellently. Recently Millen announced a coil form which is quite similar to the one mentioned above.



C1, C2, C3, C5, C6, C8, C9, C11, C12, C15, C17, C18, C19, C20—.005, Centralab Hi-Kap.
C4, C7, C10—25 μμf, small mica.
C13, C21—100 μμf, small mica.
C14, C16—50 μμf, small mica.
R1, R4, R5, R8, R11—22K, ½ w.
R2, R6, R10, R12—15K, 2 w.
R3, R7, R9—220-ohm, 1 w.
R13—5K, ½ w.
R14—100-ohm, 1 w.
R15—60K, 10 w.
RFC1, RFC3—2.5 mhy r.f. choke.
RFC2—2.5. mhy, r.f. choke. (See text)
SW1—Centralab Type GG. (See text)
SW2, SW3—Centralab Type T.
L1-L8—see table.

Construction

Extensive experiment produced the final mechanical layout. While the pictured assembly design is a departure from the usual chassis construction, it is felt that a worthwhile improvement, as regards size and a more integrated electrical function, has been obtained. A study of the illustrations shows that essentially the main assembly consists of two partitions with the tubes projecting front and rear. This grouping of components results in a final assembly that is not unlike a sandwich, a form which allows unusally short leads.

It will be noted from a study of the photographs that there are two coax fittings on the rear of the chassis coupled together with a short length of cable. The top fitting is connected to the output of the 2-mc VFO. The bottom one is connected to the input of the 6AG7 buffer. This arrangement allows the following to be done: (1) the oscillator alone can be used for calibrating, etc.; (2) a crystal switching unit can be coupled into the multipliers; (3) a phase modulating unit can be inserted between oscillator and buffer for PM operation; (4) phase modulation combined with plate modulation to give single side band transmission can be incorporated.

Oscillator

The oscillator portion of the exciter, as mentioned above, is similar to the Collins 70E-8 permeability-tuned job. The one incorporated in the model described is a home-built unit, but the Collins oscillator is quite satisfactory in the event that the builder wishes to simplify the job. The oscillator portion has been omitted from the circuit diagram, since it is felt that each builder has a "pet" circuit which he'll want to use.

COIL TABLE

(All coils wound on MILLEN NO. 69045 form.)

L1, L4	- 130	Turns	# 34	Enameled	Wire
L2, L5	- 70	"	" 29	"	"
L3, L6	- 30	"	" 24	"	"
L7	- 20	"	" 22	"	"
L8	- 16	"	" 16	"	"

Buffer

The 2-mc buffer is a low efficiency stage. The r.f. plate choke is used primarily to keep the d.c. drop to a minimum, with the shunting resistor providing a very broad resonance curve.

Multipliers

The three 6AG7 multipliers have very low grid drive requirements. This fact, combined with the use of a copper slug for coil tuning and careful choice of circuit components, produces a wide-band highly stable multiplier unit.

One section of the band switch is used to ground the cathodes of successive stages as the switch is rotated to the higher frequency bands so that when ten meters is reached all stages are in operation.

The section of the band switch that is used for the above purpose has to have the center rotor cut in half to restrict its travel. This can be done easily by taking a small three-cornered file and making a groove in the metal on each side. After bending a few times with pliers this piece can be removed.

Output Stage

The 829B push-push doubler, while not delivering a large amount of power, is quite stable and runs very cool. The low output operation of this stage was deliberately chosen, keeping in mind the

(Continued on page 48)

The Two-Meter R9'er

G. H. FLOYD, W2RYT*

Applying the familiar R9'er techniques to a 144-mc preamplifier provides a worthwhile improvement in performance for a reasonable investment.

THE 144-MC band is rapidly coming of age, and serious operators are casting about for means to improve both their transmitters and receivers. One needs only to tune across the band to become convinced that a few db here and there could make the difference between an unidentified carrier and a solid Q5 signal.

Many articles have appeared recently describing better 2-meter beams and higher-power 2-meter transmitters. These help the other fellow, but do nothing to better your chances of hearing his signal; that is, unless you use that fancy 16-element-or-better beam on your receiver as well as on your transmitter. This may sound like unnecessary advice—naturally you use your transmitting antenna as a receiving antenna. Perhaps, but many amateurs still do not do it.

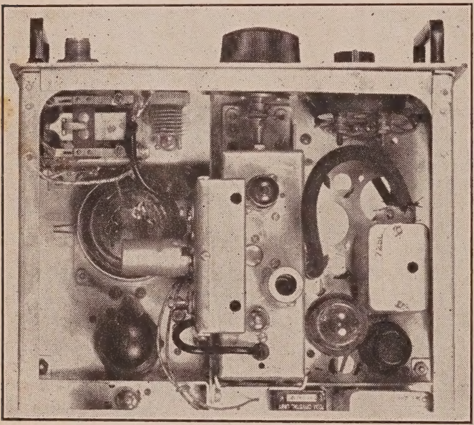


Fig. 1. The two-meter R9'er installed in an ARC-4.

The reception end of two-meter work is undoubtedly the neglected half of the reception-transmission problem. Basically, the quality of reception is governed by the antenna, the receiver feed line, and the receiver. Of these three, the receiver is probably the biggest problem. There have been improvements in the design of high-frequency receivers, but, whether the receiver is purchased or home-built, it can generally be improved still further. One obvious step toward improvement is to make sure that the receiver is matched properly to the receiving antenna. That this has been recognized on other bands is shown by the large number of R9'er units in use on 6, 10, and 20 meters.

A digression might be in order at this point for the benefit of those who are not familiar with the original R9'er. This unit was described originally in the November-December 1946 issue of the G. E. *Ham News*. It is designed to operate 6, 10, and 20 meters. On these bands it is capable of giving gains of from 15 to 60 db, depending upon the individual installation. It acts as a broad-band electronic impedance-matching device and as a broad-band preamplifier. Plug-in coils are so arranged that no tuning is required after the unit is set up on each band. A complete description of the original R9'er will be found in the appendix to this article.

Preliminary experiments indicated that it would be necessary to build a special R9'er for operation on 144 megacycles, as the original R9'er had a frequency limit of approximately 90 megacycles. This frequency limit was found to be due, for the most part, to the use of plug-in coils. The Two-Meter R9'er therefore was constructed with the coils an integral part of the circuit.

Figure 1 illustrates the Two-Meter R9'er installed in an ARC-4 receiver-transmitter. No controls need be brought to the front panel. Once the unit is aligned for the band, operation is entirely automatic.

Electrical Details

The circuit diagram for the Two-Meter R9'er is given in *Fig. 3*. This follows the original R9'er circuit rather closely but is simpler. The grid and plate circuits are made broad-band by the loading

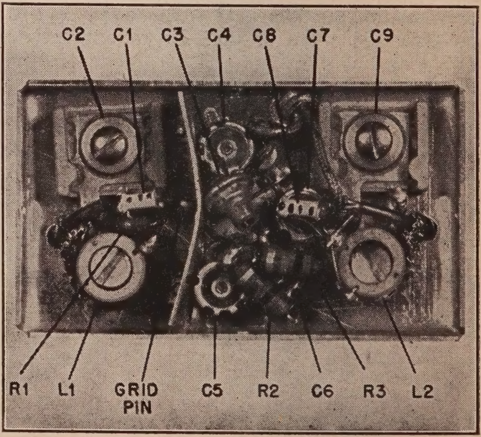


Fig. 2. The under-chassis view, illustrating the shortness of leads.

Tube Division, G. E. Co., Schenectady, N. Y.

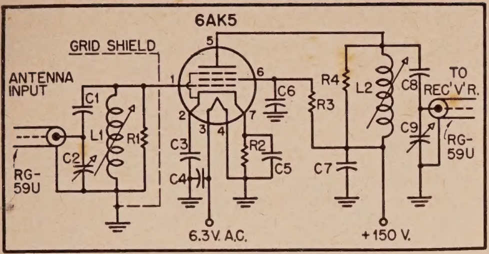


Fig. 3. The two-meter R9'er.

C1, C8—5 μμf ceramic.
C2, C9—12-100 μμf compression mica trimmer (ICA-612).
C3, C4, C5, C6, C7—500 μμf button mica.
R1, R4—5000 ohms, 1/2 w.
R2—200 ohms, 1/2 w.
R3—10K, 1/2 w.
L1—3¼ T #20 wire, space wound on Millen #69041 form.
L2—3½ T #20 wire, space wound on Millen #69041 form.

resistors, R_1 and R_4. As a matter of fact, the grid and plate circuits are identical except that L_2 and R_4 are bypassed to ground through C_7 rather than connected directly to ground.

Capacitors C_1 and C_2 in the grid circuit and capacitors C_8 and C_9 in the plate circuit form impedance matching networks. These allow the antenna feeders to be matched to the R9'er and the R9'er to be matched to the receiver. Adjustment of this match is made by C_2 and C_9 after the inductances L_1 and L_2 have tuned the two circuits to resonance.

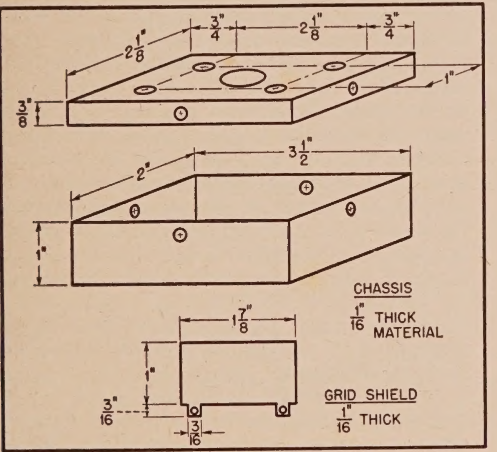


Fig. 4. Not much sheet metal work is needed.

Cathode bias is obtained by resistor R_2. Note that two pins on the 6AK5 tube (pins 2 and 7) are cathode connections. Both are bypassed to ground as shown. The screen and the hot filament connection are also carefully bypassed to ground.

Screen voltage is obtained through R_3. The original R9'er circuit used a potentiometer so that the screen voltage could be adjusted. This is desirable when changing from one band to another, but is not required for operation on a single band.

There is no provision made for switching the Two-Meter R9'er out of the circuit. Most two-meter receiving installations use receivers which are strictly for two-meter operation, and it was felt that the amateur would want to make the Two-Meter R9'er a permanent installation. For test purposes, it is possible to compare results with and without the Two-Meter R9'er by employing coaxial connectors so that the antenna may be connected either to the R9'er or to the receiver. Switching is not recommended, due to the frequencies involved.

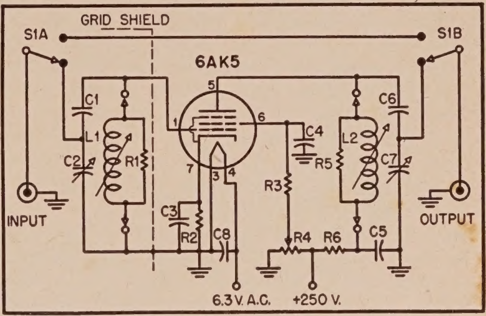


Fig. 5. The original R9'er for 20, 10, and 6.

C1, C6—10 μμf ceramic.
C2, C7—100 μμf variable.
C3, C4, C5, C8—500 μμf mica.
L1, L2—See table.
R1, R5—See table.
R2—200 ohms, 1 w.
R3—15,000 ohms, 1/2 w.
R4—25,000 ohms, 4 watt potentiometer.
S1—d.p.d.t. wafer switch (Mallory 3222).

No power supply is indicated. Power can be provided by a separate supply or from the receiver. Requirements are 150 volts at approximately 10 ma and 6.3 volts at 0.175 ampere.

None of the circuit values specified are extremely critical. The bypass capacitors (C_3, C_4, C_5, C_6, and C_7) are specified as button micas, although ceramic condensers will work equally well if care

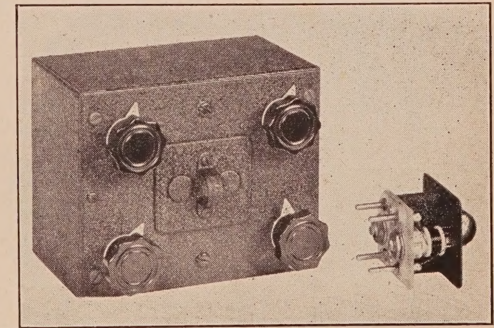


Fig. 6. The original R9'er and a spare plug-in coil.

is taken to keep the leads short. Lead lengths should be just long enough to allow a solder joint to be made ($\frac{1}{16}$-$\frac{1}{8}$ inch).

Mechanical Details

The layout of the Two-Meter R9'er is important. Follow the layout illustrated in *Fig. 2.* Note how the bypass capacitors (C_3 through C_7) are grouped around the tube socket so that minimum lead lengths may be obtained.

The grid shield is made as shown in *Fig. 4* with the tabs bent at right angles. The socket is mounted so that the connection to pin number 1 (control grid) is in the position indicated (*Fig. 2*). The grid shield then is curved slightly so that it passes between pins 1 and 2 and pins 7 and 1. This completely isolates the grid pin and the grid circuit components from the rest of the circuit.

The chassis shown in *Fig. 4* can be made quite easily with a hacksaw and a vise. Aluminum or galvanized iron, $\frac{1}{16}$ inch thick will be suitable. It is advisable to solder the four corners of the one inch deep chassis bottom. The chassis shown was designed with compactness in mind. In many applications a separate chassis will not be required, because the Two-Meter R9'er can easily be incorporated into your present two-meter converter or receiver.

A precautionary note: keep all leads as short as possible. If any r.f. leads are longer than one-quarter inch, *shorten them!* This statement need not apply particularly to the Two-Meter R9'er, as it is excellent advice for any high-frequency equipment.

Tune-up Adjustments

Input and output connections should be made with high-quality (low-loss) wire. Most types of coaxial cable are satisfactory. Transmitting twin-lead is satisfactory for the input connection, but coaxial cable is recommended between R9'er and receiver. Make certain that a short, low-inductance connection is made between the chassis of the R9'er and the chassis of the receiver and that this connection is well grounded.

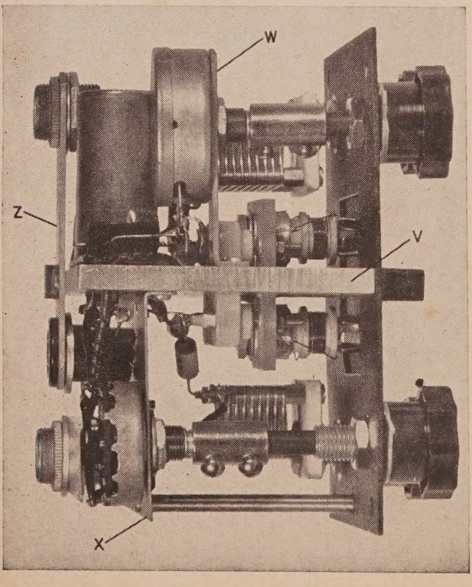


Fig. 7. Bottom view of the original R9'er.

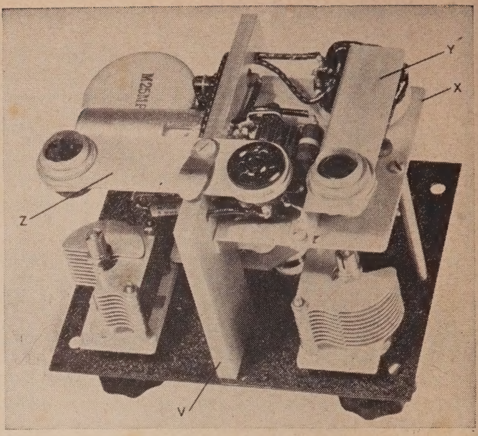


Fig. 8. Rear view of the original R9'er.

When trying out the R9'er for the first time, it is possible that the input and output circuits will be badly out of tune. For this reason a relatively strong signal may be required for initial tuning. A signal generator or a nearby amateur transmitter will usually suffice. Set the receiver to the middle of the band. Use either the receiver S-meter or an output meter as an indicator and tune L_1 until the signal is peaked. Repeat with L_2.

Next, return to the grid circuit and adjust C_2 and L_1 in combination until maximum output is obtained. Adjustment of one has a slight effect on the other, so that it may be necessary to go back and forth in tuning several times before maximum output is assured. Repeat this same process with C_9 and L_2.

As a final step, it may be desirable to decrease the value of R_3 slightly in order to determine if an increase in screen voltage will give an increase in gain. Normally the screen voltage can be raised a great deal without affecting gain. It should be adjusted so that a maximum of gain is obtained with a minimum of screen voltage.

Performance

Using the Two-Meter R9'er, gain will be achieved for two reasons. One, the unit is matching the antenna feed line to the receiver. Two, the Two-Meter R9'er is a radio-frequency amplifier. Taking everything into consideration, you may expect to get 20 db gain in the average installation. In some cases, gains as high as 60 db have been realized.

In any event, all R9'er installations that the author is familiar with permitted the owner to receive readable signals using the R9'er that could not be heard without it.

(Continued on page 52)

Undercover to Crete

J. W. WENGLARE, W4LIU, TA3AA*

Back in August of '48, while working W1FH from TA3FAS, ole countryside Charlie gave me the idea of how nice if I could make a quickie to Crete and give the boys a break on a new country.

I had planned to leave sometime in June, but being in the U.S. Air Force, Mission to Turkey, made it necessary to take some of my accumulated leave sooner. Well, the trip finally started to materialize this May after getting dry rectifiers via air mail from the States to build a light-weight rig.

After trying several different tube lineups using voltage doubling rectification for plate power from 220-v.a.c. mains, a rig about 25 to 30 watts was the result, using 6L6 crystal oscillator and a 6L6 final. The receiver constructed used a IT4 and a 1S4, and was about the size of two cigarette packages; it worked from 45 and 1.5 volts of batteries. The smaller any radio equipment, the harder it is to get it working smoothly. I had quite a time making it bloop.

On May 18th, at 11 a.m., I thought I had better call the airport and get out on the weekly flight. They told me if I got there by noon I would have a good chance of getting on, so there was no time to lose. Shaved, dressed, packed (what a job), and got a bite to eat. I missed out on the fried chicken dinner my xyl was just preparing. Took off like a bird in my car and lost no time making tracks to the airport seventeen kilometers from town. Made the plane, but there were no seats left; I sat down on a pile of parachutes.

When we landed in Athens I had to stay overnight, because it was too late to get a flight to Crete. Was off at 1630 the following day, and the fare only cost me 380,000 Drackamans, not counting my over-weight on baggage, although my rig and receiver weighed in at about three pounds. Excess weight must have been the fried chicken in my B4 bag.

Arrived in Irakleion, Crete, at 1730 and found the Minos hotel, which turned out not to be operating due to heavy war damage. I found a new hotel. With no intentions of setting up the first night, an early sack time was welcome. As yet, no one who spoke English had been contacted.

On Friday the 22nd I had my room changed to the third floor. Got permission to put up a receiving (hi) antenna on the roof, which was five stories up and made me gleam about the good start the r.f. should get, in addition to the beautiful sweep towards the States over the blue Mediterranean. I didn't like all the steel clotheslines strung over the roof, but did the best I could in stringing up a folded dipole of 300-ohm twin lead.

I needed my soldering iron to make some good joints on the antenna, but found it would only get warm. What was wrong? The line voltage was surely 220 like everywhere else that side of the world, but my ole voltmeter read 108 volts. What to do? I had it all built for 220. No time was lost in shunting out series rectifiers, resistors, and bleeders. Then I remembered leaving my trusty neon bulb and spare receiver tubes in another bag I had intended to take at first and then left. I had a spare flashlight bulb, and a loop was made for it PDQ. It nearly burned out when I went through resonance with the final. A 0-120 r.f. milliammeter was connected in series with one lead, and the final could be loaded to give 100 r.f. mills in the antenna. Not much, but one thing for sure—the boys would have to dig for my QRP. My 7000 kc xtal had a badly burned spot, and even after scraping and washing it would give me only half the output my 7010 xtal would. So it looked like I would have to operate inside and try to buck the QRM on the low end of twenty meters.

Jules in the act of giving the gang a "blast" with his ether buster.

Early to bed again and wondering if I could wake up early enough without an alarm clock. Did pretty well—up a few minutes before 0500. The band seemed full of Ws. I had the door locked, no light except my flashlight stuck in one of my socks to dim it, my key padded with two handkerchief's folded over several times, and the contacts set to a gnat's-eyebrow spacing.

Then came the big test. SV6AA should be attractive to the boys, although they were probably wondering where I was. W8DHC called at 0500. He gave me 459; he was 589 (that's my ole 1929 blooper comparison reports from memory). Then about seventy-five minutes wasted calling stations and CQing without results. Then W8NBK answered with 569, followed by W2QKS, W3JTC, W4NNN, W3GRF at 0740 for the W fade-out.

(Continued on page 58)

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*% U. S. Air Force Group, Ankara, Turkey

RST 519—Solid Copy

WILLIAM I. ORR, W6SAI*

Some simple steps you can take to increase your ability to copy really weak signals without digging into your receiver. A couple of db improvement in S/N can buy a lot.

RST 519 & TKS FER FIRST VQ9 QSO. 73 & PSE QSL SK VQ9AA DE W6SAI. I sat back with a sigh of satisfaction. Hot dog! That was a nifty one to QSO, and the rig worked just fine! The plates of the push-pull 1000-T final amplifier were slowly turning from a blinding white color to a dull brick red as they recovered from the beating I had just handed them. The line voltage was returning to 115 volts from a numbing low of 85 volts. Automobiles in front of the house were slowly starting to move again as the street lights assumed their normal brilliance. I reached for the ragged sheet of paper that held my "countries-worked-total" and wrote, "VQ9AA, number two hundred and. . ."

The telephone rang. I pushed the earphones forward on my head and picked up the instrument. "Hello . . no, I'm not on the air. . ."

"It's me, little chum," said Jonesy-boy, W6WKU.

"Oh," I said, my nervous system relaxing again, "heh, just thought you were a BCL."

"Say", said Jones, in a chummy sort of voice, "just where was the VQ9? I looked all over the band but I couldn't find the joker."

"Zero-beat with me, T8 and weak as water. Just out of the noise level, but I copied him 100%."

Jones' voice took on an inappropriate quality that would have alarmed a psychiatrist. "Well, I couldn't hear him! And I have a grounded-grid r.f. stage in my receiver! I'm going to rebuild the whole darn thing! How come you hear 'em? You only have a 6SK7 r.f. stage—and besides, my beam is six feet higher than yours, yak yak, yak."

* * *

Tough, isn't it?

* * *

One of the hardest things in the science of working DX is HEARING the stuff! When Jules gets on the air in Inner Tannu-Tuva with 3 watts you can just note the fellows that work him and bet that they are the boys with a superlative receiving set up. (*Or a good imagination—Ed.*) A lot of fellows think that adding a stage or two of r.f. to the receiver will solve the signal/noise problem. This is only partially true. The signal must be persuaded to flow into the antenna, down the feedline, past the antenna relay and into the waiting arms of the receiver's antenna coil. At any point along this hazardous journey microvolts of signal may be lost or may be befuddled into circling endlessly around in the feedline. Let us examine each one of these points of danger in turn and see if we can't help the poor little signal along.

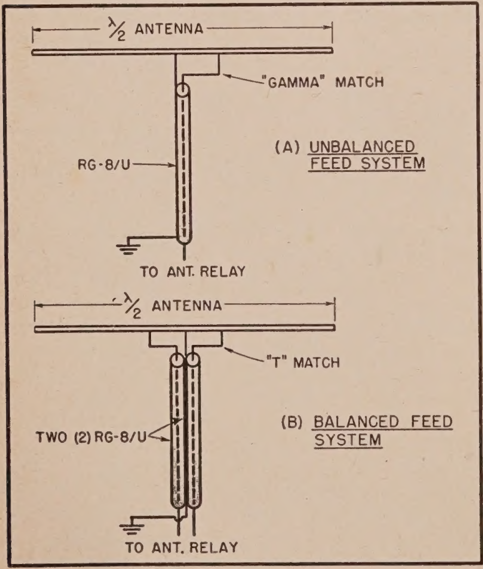

Fig. 1. Two ways of fixing up your receiving transmission line so that it will pick up as little local QRN as possible.

The Antenna

Many fellows forget the Theorem of Reciprocity regarding an antenna. Stated crudely, it is: a beam delivering a specific power gain on transmission will also produce the same gain when used for reception.

If a beam antenna loads poorly on transmission, if the transmission line has a high s.w.r., if it is not adjusted for optimum results for transmitting, then you can bet your last dollar it is not working efficiently as a receiving device! Grid-dip tune the radiating element to your pet frequency and match the feedline to the impedance of the beam. This is step number one towards improving reception.

The Feed Line

Here again, as before, remarks made about the transmitting efficiency of the line apply equally to receiving. The line should be a good match for the beam. If it is not, an appreciable amount of reactance will be reflected back into the receiver, and this will detune the first r.f. circuit.

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*555 Crestline Drive, Los Angeles 24, Calif.

The line should be a low impedance one and should be shielded! (*Figure* 1) This is most important. It is practically impossible for the average ham, having to contend with gutter pipes, telephone wires, and light lines, to obtain a balanced transmission line. An unbalanced open wire line, or even one made of 300-ohm ribbon, can pick up a tremendous amount of extraneous signals and noise. By the same factor, the line can also radiate a large amount of fundamental and harmonic energy that will find its way into the next-door TV set!

Here is a simple test whereby you can determine the receiving "efficiency" of your line: Disconnect the line from the antenna at the far end, and, keeping the line in the same physical position, place a carbon resistor, equal to the line surge impedance, at the antenna end. Now, turn on your receiver and listen! Do you hear all those signals? Do you hear that noise? Obviously that stuff you hear is not helping the basic signal/noise ratio of the one signal your beam is trying to pick up, is it? The signals that are being picked up by your feed-line become a natural barrier between the correct signal and the receiver!

As stated before, the answer to this is the use of a shielded transmission line. If an unbalanced feed system, such as a Gamma Match[1] is used, a suitable length of RG-8/U may be employed. If the antenna system is balanced, a split radiator, for example or a "T" match, two RG-8/U lines in series [2] may be used, or a twin coaxial line, such as RG-22/U or RG-59/U is equally good.

Ground the shield of the coaxial line to the electrical center of the radiating element and also at the receiving end of the line. The coaxial line should preferably be matched to the antenna by a "T" match system or a folded dipole arrangement. Steer clear of unshielded matching stubs as they are a good source of signal pickup.

The Antenna Relay

Now, here is a little stinker that can cause a lot of grief to Johnny Q. Ham, who unthinkingly brings his feeble received signals in close proximity to all the crackling, buzzing noises bottled up in the 110-volt line. By all means bypass the relay coil with a good mica condenser and place a line filter in the leads to the relay.

The coaxial line leaving the relay must have the same impedance as the line feeding the relay. Don't cheat at this point and use a couple of pieces of push-back wire! Do not switch the shield of the coaxial line, only the inner conductor. If you can afford a coaxial antenna relay that may be inserted directly in the line you are a lucky man indeed.

The Receiver

At this point more signals become fouled up and lost than at any point along the way. Get out the instruction manual that came with your receiver. Somewhere in it is a paragraph that says, in effect:— "This receiver is designed to work with an antenna system of 'X' ohms impedance." That **'X' ohms may turn out to be 50, 72, 150, or 300 ohms—or anything else, for that matter. No, the man isn't kidding you, either. For best signal/noise ratio you had better feed the receiver the specified dosage of input impedance. If, by chance, the impedance matches your chosen line, all well and good. If not, an antenna tuning device is called for.**

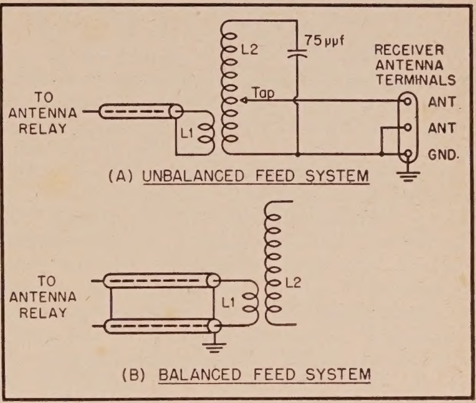

Fig. 2. Two antenna couplers which can buy an awful lot of effective gain when properly adjusted and connected between a good transmission line and your receiver.

An Antenna Tuning Device for Receivers

This device is merely an impedance transforming machine, that will take 52 ohms and turn it into 300 ohms, for example, and do it over any specified frequency range. (*Figure 2*) It consists of a parallel circuit tuned to the desired frequency and link coupled to the transmission line. It is, in turn, coupled to the receiver and "transformation" is achieved by tapping the receiver input at an optimum point on the tuned circuit. The tap point may be found experimentally by placing a signal source near the antenna and tapping up the coil from the "cold" end, while watching the "S" meter on the receiver. In my case, a signal/noise improvement of 5 db was obtained by the use of this little gadget. That is a lot of db when you are digging for a weak one!

The unit should be shielded and connected to the receiver by a short length of transmission line that will match the input impedance of the receiver. Lastly, the receiver input stage should be carefully aligned after the impedance matching device is tuned to the optimum working frequency.

Believe me, all these little additions are decidedly worth while. You are now giving the receiver a real chance to do its stuff!

The Receiver Again

The battle of the receiver has been bloodily fought and won by many authors. With Q5'ers, R9'ers, T9'ers, etc., the only thing left untouched is the dial light. They are all good ideas, and I suggest that a fling at sharpening the selectivity of the receiver is a good step in the right direction.

(Continued on page 50)

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[1] "The Gamma Match," QST, Sept., 1949, page 20.

[2] The RG-8/U lines are physically in parallel, but are electrically in series giving a line impedance of 104 ohms.

Practical Screen Modulation

FRANK C. JONES, W6AJF*

THE WRITER HAS BEEN USING CATHODE MODULATION for many years in different transmitters and has now changed over to screen-grid modulation in several transmitters having tetrode r.f. tubes. The change-over was made as the result of numerous experiments at W6AJF and from discussions on screen modulation with W6NOE and W6WCD via the 144-mc band. There seem to be many methods used in screen-grid modulation, but not much information has been made available on methods of setting it up for fairly complete modulation capabilities. At present, one form of this system is being used at W6AJF very successfully on the 28-, 50- and 144-mc bands. The transmitters use a single 4-250A on 28 mc, an 829B on 50 mc, and a pair of 4-125A tetrodes on 144 mc. Relatively high-power operation is necessary in the 144-mc band at the writer's location in a little valley nearly surrounded by mountains which rise from a few hundred feet to 3000 feet above W6AJF in the desired directions of communication. Four hundred to 500 watts input on 28 and 144 mc and 90 watts input on 50 mc are used with plate circuit efficiencies of 45% to 50% in these transmitters.

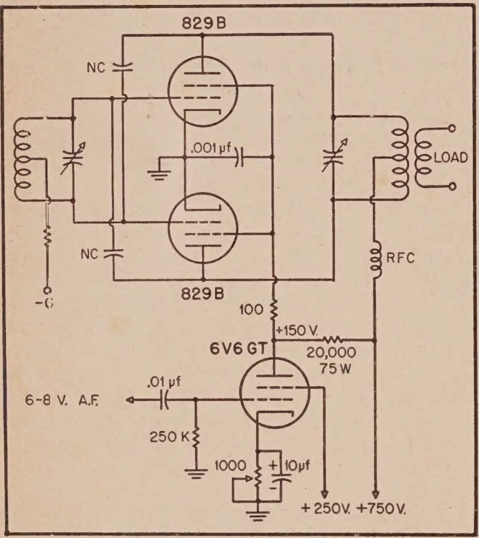


Fig. 1. A simple way of applying screen modulation to an 829B final amplifier stage which has proven most effective.

Such high values of plate circuit efficiency seem to be out of line for normal "efficiency modulation," but experimental results and normal operation over a period of time have proven that it is possible. One possible explanation is that this form of screen-grid modulation permits fairly linear operation at peak screen-grid voltages considerably in excess of the normal d.c. values used for c.w. or plate modulation.

A Practical Transmitter

The first transmitter uses the modulator circuit shown in *Fig.* 1 with a 6V6 a.f. tube modulating the 829B screen circuit. The 6V6 cathode resistor is adjusted to bring the d.c. screen voltage down from its normal value of approximately 200 volts to a value of 140 to 150 volts. A speech amplifier, or carbon mike and step-up transformer, will furnish enough grid drive for the 6V6 modulator. With the connection shown in *Fig.* 1 no negative clipping should be possible since the modulator tube cannot reach zero plate voltage. The modulator tube must be capable of drawing a current equal to the peak screen current to the 829B tube, for in effect this is a "constant current" modulation system. In the circuit of *Fig.* 1, the size of the 829B screen dropping resistor depends upon the available high-voltage supply. A value of

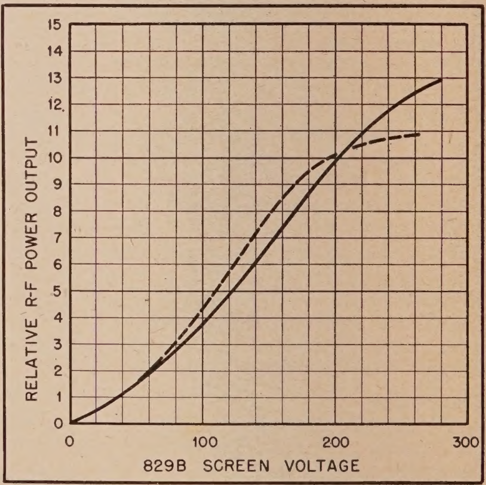


Fig. 2. Curves of r.f. power output vs. screen voltage characteristic of the rig shown in Fig. 1, illustrating the increase in linearity (solid curve) obtained as the antenna loading is increased over the loading customary for c.w. operation (dashed curve). Proper antenna loading is just about the most important factor for successful operation.

**P. O. Box 708, Sonoma, Calif.*

20,000 ohms is about right with a 700- to 750-volt supply, and 12,500 ohms for a 500-volt plate supply. A 15,000-ohm resistor will be suitable with a 600-volt supply, since the d.c. value of 829B screen current and 6V6 plate current total around 28 to 30 ma for screen modulation. Opening up the 6V6 cathode circuit restores the 829B to normal operation for c.w. with about 25 ma at 200 volts on its screen. If the control grid of the 829B is driven with normal r.f. input, but with a grid leak or total bias of 25% to 50% more than that listed in tube bandbooks (and with about 25% less grid current), the 829B screen current will run about 25 ma on c.w.

Antenna Loading

The antenna loading is the all-important factor in any efficiency modulation system such as grid modulation, cathode modulation, or screen modulation. That statement holds true for amateur transmitters where clear, understandable voice modulation is essential rather than "high fidelity." Without greater than normal antenna loading, these systems have a very narrow linear operation range. The curves of *Fig.* 2, which were run experimentally at two different values of antenna loading, illustrate this fact. The solid curve is for antenna coupling considerably greater than that normally used for c.w. or plate modulation. This solid curve is relatively linear over a much wider range of screen grid voltage and r.f. power output than the values for the dotted curve which represents the conditions which might normally be set up for c.w. or plate modulation with moderate antenna coupling. If the operator attempts to screen modulate with light antenna loading, at 140 or 150 volts d.c. on an 829B screen, the antenna current will go down with modulation rather than up. To obtain linear operation, it would be necessary to reduce the screen d.c. voltage to between 100 and 110 volts, and the carrier output would be approximately 50% less than could be obtained for heavy antenna loading.

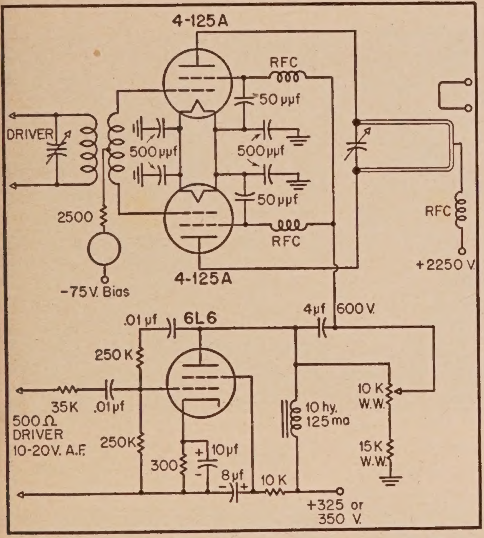


Fig. 3. A high-power screen-modulated setup using capacitive coupling between the modulator and the screens of the modulated stage.

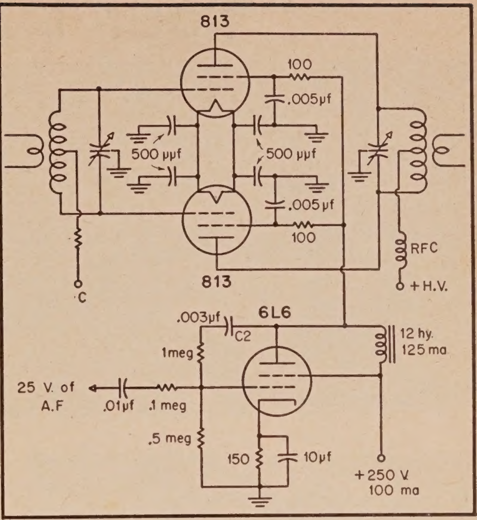


Fig. 4. When a pair of 813s is used in the final, the plate of a 6L6 modulator can be connected directly to the modulated screens.

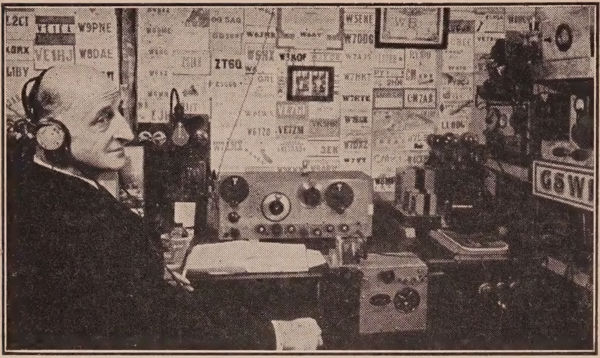
The heavy antenna loading tends to straighten out the modulation characteristic and permits much greater positive peak modulation. When the antenna loading is great enough, the antenna current will increase slightly with voice modulation, even with the d.c. screen voltage as high as 75% or more of its normal c.w. rated value. The quality sounds better in a monitor under these conditions, and surprising values of plate circuit efficiency are possible if high plate voltage is available. The curves of *Fig.* 2 were made with a 500-volt supply to the 829B, and a plate efficiency of 40 to 45% could be obtained with over 90% modulation capability. Later the plate voltage was increased to slightly over 700 volts by using condenser input to the power supply, the plate input increased from about 60 watts to 90 watts under modulation, and the efficiency increased to about 50%. Forty to 50 watts of r.f. output from an 829B on 6 or 2 meters with a 6AQ5 or 6V6GT modulator is not to be sneezed at in anyone's language.

A High-Power Version

The circuit shown in *Fig.* 3 is the form used at W6AJF for screen modulating a 4-250A or a pair or 4-125As, and will probably be used with a pair of 813s for the lower frequency phone bands. A single 6L6, with some a.f. feedback to improve its linearity when operating into a plate load of such variable impedance as results with screen-grid modulation, makes a nice sounding modulator. The a.f.

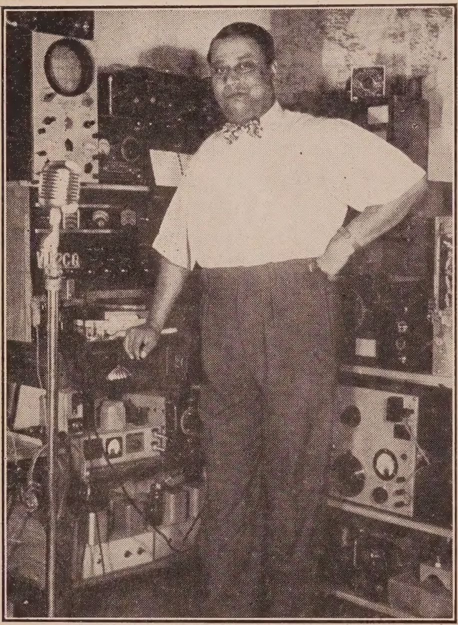
(Continued on page 65)

Your DX Album

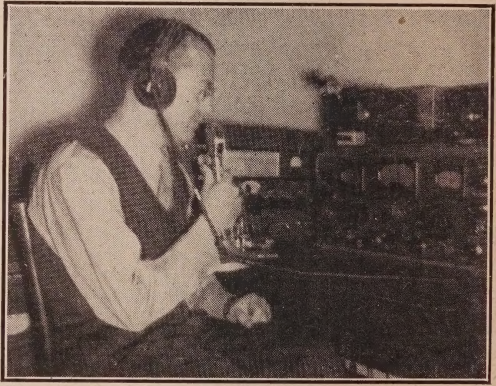


You've worked them, now meet them face to face. DX hams don't look very different from the gang that meets at the local radio club — do they?

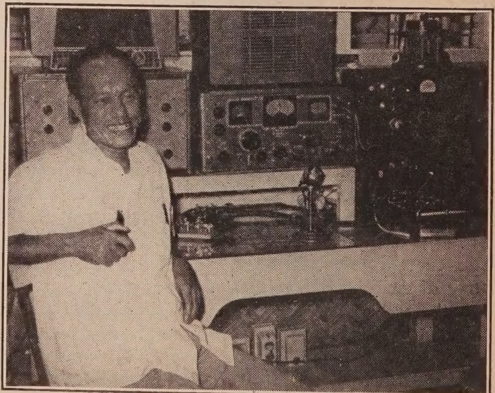
Top left: Old-time DXman G5WI with his collection of etchings.



Above: VU2CQ. Below: VP9CC



TA3GVU



DU1ABT

The Monitoring Post

gleaned by THE BRASSPOUNDER*

Here's some inside information on the guy at the other end of the QSO. The Brasspounder's notebook is extensive, but he'd welcome contributions from all active hams so we can all get to know each other better. Keep him posted on the latest gossip, and he'll dish it out to us on this page each month.

TWO FULL WAVE ANTENNAS over the Wisconsin River bring W9PIW satisfactory results on 40 c.w. . . . . An ordinary bottle, with the letters "HA" molded on the bottom, reminds us that W3ONX had something to do with its manufacture at Washington, Pa. . . . We learn that the bell-like tone of W1HFI has been ringing since 1926, the same transmitter having been in use since then with no changes other than the replacement of tubes. . . . W5FMO gives 40 c.w. a whirl once in a while, but even the key work must be interrupted often for a sneeze or blow because of hay fever; one instance where break-in is a must, for the above interruptions affect his hearing. A "bk" from him really means "stand by for a blow or sneeze;" FMO is surprised by the number of messages he takes from Pacific outposts to the families of New Orleans GIs; this traffic comes to him direct from Guam, though he gets some from other islands and signs in on the 3905 Delta Net Sunday mornings. . . . W5KTE down that way seems to be the best source for information about activities there. . . . Another glass worker who blows is W9GEQ and he takes traffic for Wisconsin on 7170 kc on alternate nights beginning Monday at 7 P.M.; W9WDD in Illinois is the NCS of this net with W2STJ as assistant NCS. . . . An antenna thrown over and laying on the roof of W6DTY is used until his masts are built, but he's complaining that his signals on the East Coast are no better than S6—whadaya want, anyway?

W7ZT enjoys what may be termed a "ham's paradise" in that local QRM and TVI are nonexistent. Too far from TV stations, and he's the only active station in his town. A pair of 813s give him up to the legal limit, and his QSL cards are highly prized. He's a highway engineer working in a district of the U. S. Highway Bureau of Public Roads, and is located in the smallest capital city in the U.S.A., Carson City, Nev. W7ZT is the only direct means of getting traffic into that city. He can be heard on 3, 5, 7 or 14 mc frequently, especially Saturday nights. W7LKZ, now at Stanford U., the other operator in that town, has skeds three times a week with ZT on 3569 kc, to enable LKZ to keep in touch with his family, headed by Supreme Court Justice Milton Badt. . . . W7PST, Minden, Nev., has a traffic net going now on 3660 and 7225 kcs, so Nevada traffic can be placed easily by watching these freqs.

On the air since 1905, W1PI, who handled the AARS phone net in the First and Eighth Districts for eight years, came back to c.w. recently, using the same rig he built in 1926—it has seen 19 years of service . . . W5NTT, with four watts input, 100 volts on a 117N7, does a swell job on 7 mc—a solid QSO with a W2 for almost an hour. The little rig has brought contacts with 25 states and two VE7 stations—his big rig on 10 phone and c.w. and 7 c.w. has worked more than 100 countries . . . W1BFT, W1MXP, W1FTJ, and W1AOQ were heard going strong in the N. H. QSO party recently and apparently ran up high scores . . . K5NRL on 7100 kc takes traffic for Arkansas . . . After 26 years on the air, W6JDN contacted his first Arkansas station, W5NTT . . . W1DHT is the call of the Bristol Radio Club, the oldest radio club in Connecticut, and the boys have just finished building their new clubhouse atop South Mountain, 1,000 feet above sea level. The rig squeezes out from 350 to 500 watts on just about all bands, phone and c.w. W1COJ is the prexy, backed up by some old timers, such as W1VK, QB, AYR, and IFQ, says W1SBU, treasurer . . . Since birth, 63 years ago, W8UCH has been sightless, but it has no effect on his 7-mc signals getting out with 40 watts . . . Close to 7000 kc every Sunday morning at about 8:30 can be heard that old gang of Morse ops having their weekly get-

(Continued on page 40)

Beauty and the Beast! W3PUD and W4RB seemed to be having a good time at the Hudson Div. Convention.

**Address correspondence to: The Brasspounder, % CQ Magazine, 342 Madison Ave., N.Y. 17, N.Y.*

Inside the SHACK AND WORKSHOP

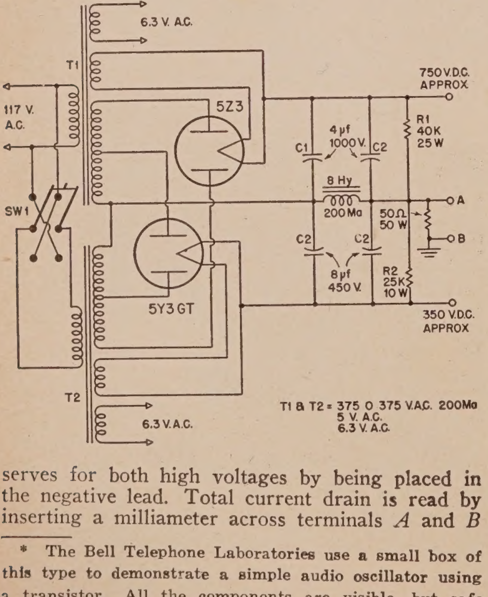
Plastic Meter Cases

If you ever have need for a small attractive case to house a meter, or possibly a crystal diode type field strength meter, look into these plastic ice-box dishes. Variety stores generally carry them in various sizes, shapes, and colors. The four-inch size will do nicely for three-inch diameter meters. Cut a hole in the bottom to fit the meter, and a hole in the side to take a grommet for four lead wires. The meter hole may be easily cut with an extension bit, or small scroll saw. Drill the three small holes for the meter flange and mount the meter. Connect the leads to the meter through the rubber grommet. If the box is to be mounted to the wall or panel, drill holes in the detachable top and mount the top to the desired surface. Then fit the box together and wet the edges of the box with coil or airplane cement. Firmly press the two sections together and allow to dry. Once dry, you will have a very attractive and permanent meter mounting. With a little ingenuity one of these boxes could easily be used to mount a small field strength meter.*

—*Robert E. Heineman,* W7LLO.

Duplex Power Supply

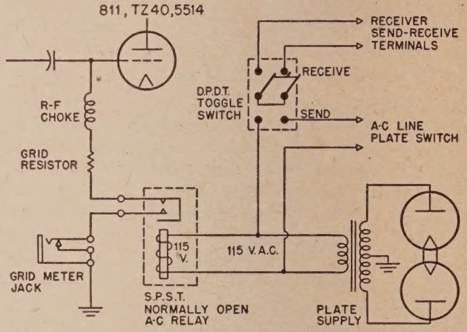
This novel power supply achieves two ends. First, it uses low cost receiver type power transformers and secondly, it provides two of the most commonly employed d.c. voltages without sacrificing a lot of power in bleeders. Note that transformers *T1* and *T2* are identical units and that the filter choke serves for both high voltages by being placed in the negative lead. Total current drain is read by inserting a milliameter across terminals *A* and *B* with the positive meter terminal to ground. Although the voltage is doubled the maximum current in such a circuit is about 90% of that rated for a single power transformer. The switch in the primaries is not actually necessary and is only shown to illustrate how the two primaries may be placed in or out of phase.



—*Don Jeppesen,* W0QFZ.

Standby A.C. Hum

One advantage of the high-mu "zero-bias" tubes, such as the 811, 5514, TZ40, etc., is that they may be operated as r.f. amplifiers (c.w. service) at moderate plate voltages without external bias. In many circuits this may produce a mysterious a.c. hum in the receiver which modulates any c.w. signals in the vicinity of the frequency to which the transmitter tank is tuned. Oddly enough, this occurs when the plate voltage is off and only when the filaments are on. Since most of us cut the plate voltage to the transmitter during standby periods, this effect can be very annoying. In fact, it may even be necessary to open the filaments to make sure if the other fellow actually has a d.c. note. It seems that the weak alternating currents radiating from the filament actually circulate through the grid and plate circuits, even though no other potentials are applied. A few volts of bias will completely stop it, but, since we're interested in using zero-bias tubes, the only solution appears to be breaking the oscillatory circuit during standby operation.



Opening either the plate or the grid circuit will stop the a.c. buzz. The grid circuit appears more logical since there are no high voltages. One scheme that works fine is the insertion of a small normally-open s.p.s.t. a.c. relay in the grid lead to ground. The relay coil is connected to the 117-volt a.c. line across the primary of the plate transformer, so that when the plate supply is off, the grid circuit will be open. The d.p.d.t. standby switch shown in the diagram provides a quick and simple transfer from the send to receive and vice-versa, when one's receiver has external "send-receive" terminals.

—*D. L. Devendorf,* W8EGI.

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* The Bell Telephone Laboratories use a small box of this type to demonstrate a simple audio oscillator using a transistor. All the components are visible, but safe from accidental tampering.—Ed.

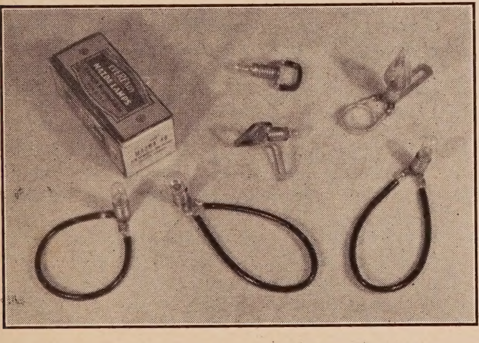
Xtal Controlled I.F. Channel

An ever-increasing number of amateurs are using converters to cover the bands below 10 meters. This requires that the communications receiver be set to a specific frequency in order to maintain the dial calibration of the converter. The ideal way to accomplish this, and at the same time eliminate any warmup drift of the receiver, is to make the second oscillator-mixer stage crystal controlled. This may be done by connecting a crystal in series with a 5 $\mu\mu$f ceramic condenser across the oscillator coil. The crystal should be 455 kc higher than the desired frequency of the first i.f. channel. Thus, VHF-152A users might employ crystals a little beyond the high end of the 40 meter band. From the quantity of surplus crystals on the market it should be relatively easy to find one that comes close to the desired frequency. The crystal may be left in the circuit if the resonant frequency is slightly removed from any desired signals. The oscillator in the communication receiver must be retuned to compensate for the added capacity of the crystal. The receiver will then tune as before, except near the crystal frequency where the receiver will lock for a few divisions of the dial.

—*Wayne W. Cooper,* W8EWC.

Sensitive R.F. Indicator

Hams who build and adjust low power transmitting equipment are sometimes handicapped by the relative insensitivity of the neon lamp indicator. Most neon bulbs will require between 50 and 60 volts to ignite, and often even this low an r.f. voltage is unattainable until the circuit has been fully aligned. A more sensitive indicator can be made readily from a dial lamp socket, a dial type bulb and a small loop of wire. Several specimens are shown in the photograph. Extreme sensitivity is achieved by using a No. 48 (screw base) or No. 49 (bayonet base) bulb, which is rated at 2 volts and 60 ma. A one-turn loop is generally adequate, although two or three turns may be needed for closer coupling to large coils. Changing bulbs affords an easy sensitivity adjustment, all the way down to the 14 volt Xmas tree bulb which acts more as a dummy load than an indicator.

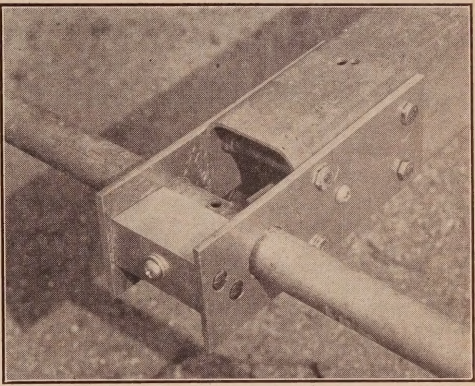


—*D. H. Rogers,* W2MLF.

Send contributions to Shack and Workshop Editor, CQ Magazine, 342 Madison Avenue, New York 17, N. Y. Payment will be made upon publication for all material used.

Extension of a Boom

One of the national amateur complaints against the home-brew parasitic beam is that quite often suitable material for the boom is just a few inches too short. I ran into this problem, but devised the little extension gadget shown in the accompanying photograph. To extend the boom, cut two pieces of 3/16 or 1/4 inch flat aluminum sheet and bolt to the side of the boom. Then drill through both these pieces to allow the parasitic element to be supported. At the end of the new boom length place an aluminum block which has been grooved on one side. This grooved edge should press against the element and should fit fairly snug. The block and the element are then bolted together with a single bolt. Finally, the block is tapped for four brass bolts which secure the block to the boom extension.



—*Louis H. Hippe,* W6APQ.

Correction

In Don Good's "Man Sized Exciter," described in the November issue, we inadvertently neglected to show the revised modulation scheme which Don worked up to increase the percentage of modulation. Here are Don's instructions for changes: 1) Delete R_1, 2) Delete R_2 and replace it with a jumper, 3) Add an audio bypass condenser between the grid side of RFC_1 and R_3, 4) Add a 1N34 crystal, with its positive terminal grounded and the negative terminal connected to the junction of C_2 and RFC_1. Don adds further that the audio modulating source must be of low impedance.

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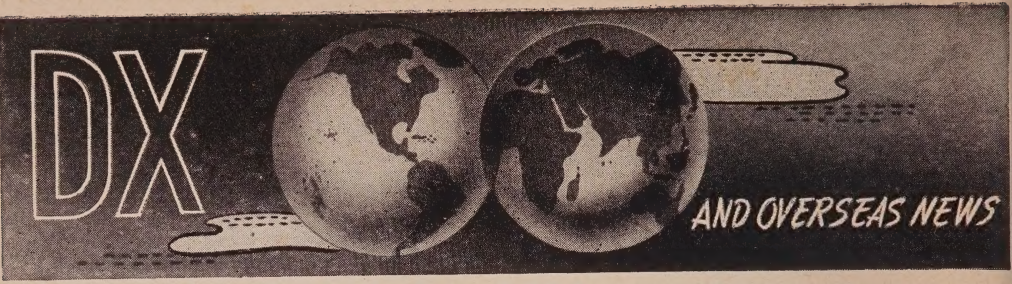

DX AND OVERSEAS NEWS

Conducted by HERB BECKER, W6QD*

THE SECOND *CQ* World-Wide DX Contest is history. At least it will be by the time you read this, but, as I write, it is still a week away. Before going any further, I want to say one thing in capital letters, "WILL ALL OF YOU PLEASE SEND IN YOUR CONTEST LOGS NO MATTER HOW SMALL OR LARGE THE SCORE MAY BE." Last year there were many who participated in the contest, but some didn't send in a log for one reason or another. Who knows, there might be someone who needs your log for verification, or for that matter, it might be the missing link when we cross-check contest logs. Next month, I'll do my darndest to round up some scores, and we'll have a quick look at the way the contest stacks up.

Once again, we are happy to announce the awarding of WAZ certificates to the following:

150	VK3JE	William Adler	40-188
151	W6WB	Clayton F. Bane	40-196

Neither of the above needs to be introduced to you since VK3JE has been knocking them off for ages. Bud Bane is a real old-timer in this DX racket. He got off to a slow start at the end of the war, but he seems to be getting up more steam.

An all-time certificate has been awarded to OK1SV. The only zone he needs for postwar WAZ is number 26. Congratulations to him, and let's hope he gets that zone 26 card very soon.

Read It And Weep!

The world of DX had a little gloom cast upon it when an FCC notice was issued on October 13. The following is a copy of the entire "Public Notice 41636."

Article 42, § 1, of the Radio Regulations of Atlantic City stipulates that "Radiocommunications between amateur stations of different countries shall be forbidden if the administration of one of the countries concerned has notified that it objects to such radiocommunications."

Accordingly, the International Telecommunication Union in Notif. 578 has notified the members of the Union as follows:

> *"a) The following Administrations have FORBIDDEN radiocommunications between their amateur stations and amateur stations of other countries: Austria; Burma; French Settlements in Oceania; Greece; Indo-China; Indonesia; Iran; Israel (State of); Lebanon; Madagascar and dependencies; Mauritius; Netherlands Antilles; Siam; S. Pierre and Miquelon; Togoland (Territory under French Trusteeship)*
>
> *b) Amateur stations: Special Cases.*
>
> *India: Exchanges with amateur stations of other countries are authorized except with countries forbidden communication of this kind.*
>
> *Luxemburg: This service does not exist as yet.*
>
> *Morocco (except the Spanish Zone): Exchanges are conditional on reciprocity.*
>
> *Rumanian People's Republic: The Roumanian Administration has not yet organized an amateur service."*

The foregoing is effective immediately. Licensees of Amateur stations in the United States, its territories or possessions, should be guided accordingly when engaging in international amateur communications.

Immediately after I read the above "Public Notice," I thought I would drop a line to George Sterling, W3DF, who, as we all know, is one of the FCC Commissioners, to see if there might be some last minute news which could be passed along to you. With George's permission, I am quoting his letter, which I think will elaborate a bit on the "Public Notice."

(Continued on page 71)

Ham radio in Italy is enjoying a boom, according to Bob Hertzberg, W3DJJ (extreme left), who visited that country recently. This station is I1KV, with owner Domenico Carbone at the mike; the QTH is Alassio on the Italian Riviera. The interested bystander in the center is John Geloso, I1PT, the leading radio parts manufacturer of Italy.

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*Send all contributions to Herb Becker, 1406 South Grand Ave., Los Angeles 15, Calif.

W. A. Z. HONOR ROLL

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WAZ

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W6EBG	225
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W6ENV	224
W6GRL	222
W3GHD	221
W6ADP	220
W6MEK	220
W8BHW	218
G2PL	216
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W3LOE	216
W6ITA	214
G6ZO	214
W6SN	213
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W2AQW	208
W8HGW	208
VE7ZM	206
W4BPD	206
W6MX	205
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W6TT	204
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OK1LM	172
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W6CIS	170
W6BAM	170
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W6RLN	168
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W6GDJ	167
W6UHA	167
VK3CN	167
W6PZ	166
W6DUC	166
G3DO	166
W8SDR	166
KH6MI	166
W6EPZ	162
W6KUT	161
KH6IJ	161
W6PUY	160
W6BVM	159
W7BD	157
W7BE	156
W6BAX	155
G3AAM	154
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W6TEU	133
W6RDR	133
W6MHB	130
W6YZU	129
W7GBW	127
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W6NRQ	123
W6MLY	123
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W2PEO	211
W3KT	211
W3IYE	209
W9ANT	209
W2HHF	208
W8NBK	203
W4AIT	201
W2NSZ	201
W9IU	201
W2HZY	200
W9RBI	199
W1BIH	197
W2GWE	195
W6OEG	195
PY1DH	194
F8BS	194
W1JYH	191
W3JNN	191
W3DPA	191
W8JTC	191
W3EPV	191
W2AGO	191
W1ENE	190
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W3DRD	183
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W41NL	183
W3OCU	181
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I1KN	173
W3DKT	173
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W0SQO	171
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W2EMW	170
W1NMP	169
W3JKO	169
W2CYS	167
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W8LEC	166
W2CNT	166
W4DKA	165
W2WZ	165
W9MXX	164
W0EYR	164
W9VND	164
W6EAK	163
W3KDP	162
W4BRB	162
W6CTL	162
G5DQ	160
W9LM	159
W0GKS	158
W4OM	158
W0AIW	157
G8KP	156
W9YNB	155
G6QR	152
W2RDK	152
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G2AJ	151
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W7HXG	112
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W6LEV	103
W7ENW	101
W6WJX	101
W6AX	93
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38 Zones

VE3QD	190
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KP4KD	170
CM2SW	167
W8KPL	166
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W8FJN	160
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GW3AX	123
W9TB	122
GW4CX	120
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W2HMJ	173
W1KFV	168
W2ZA	160
W2RGV	149
W4IWO	146
W3WU	146
W8EYE	142
W4ML	137
GM2UU	133
W2AYJ	133
W9ABA	132
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W4DIA	129
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G4CP	117
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W0FET	115
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KL7PJ	105
W8HSW	104
W7PK	104
G5MR	100
W2BLS	99
G3AAE	99
W2SGK	95
KL7KV	88

36 Zones

W4LVV	147
W4HA	147
W2GVZ	141
W9WCE	133
OA4AK	128
HC2JR	125
W3AYS	124
W2WC	124
ZS2AT	123
W0RBA	122
SVIRX	119
MD5AK	118
W2BF	115
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G2AKQ	112
W5CD	108
VE5JV	108
W2JA	102
G2AO	100
W5BK	99
G6WX	95
GM2AAT	75

35 Zones

W4RBQ	140
W8ZMC	137
W4DHZ	132
W1BFT	130
VE3AAZ	130
W9CKP	124
W9RQM	119
CO6AJ	119
W8AVB	119
W9LI	118
W6ZZ	118
VE3ACS	117
W9FNR	112
VE1PQ	111
W9DGA	108
FE8AB	107
W2HAZ	106
W0GBJ	101
W0FWW	99
W6ETJ	97

34 Zones

W4IYT	127
W1MRP	104
W8JM	89
W9WEN	83
W8PCS	80

33 Zones

W4QN	110
W2SEI	100
OE1FF	91
W8QUS	85
KH6VP	83

PHONE ONLY

39 Zones

W6DI	189
W6VFR	164
W7HTB	161
HB9DS	145
VE7ZM	145

38 Zones

W2BXA	172
W4CYU	171

37 Zones

XE1AC	178
W1JCX	170
W3LTU	169
W9RBI	164
W8REU	163
G2PL	154
W6PXH	152
W6WNH	150
W8BF	146
G3DO	144
W3JNN	136
W1HKK	136
W6KQY	135
W6TT	133
G6LX	124
G2AJ	121
F8VC	115
W6AM	105

36 Zones

W1NWO	163
W1MCW	153
W7MBX	144
W9HB	139
W4ESP	136
W2D	135
W9BZB	132
W4INL	129
W1FJN	128
GM3UU	127
G6BW	127
W0HX	118
VE3BNQ	108
G5YV	106
G6WX	105
W3DHM	96
W6SA	92
F8DC	87

35 Zones

VK3BZ	151
W4HA	136
PK4DA	132
W6PCK	129
W6CHV	128
G8QX	123
W2GHV	121
CE3AB	121
W9CKP	117
G3FU	115
W5LWV	108
W4OM	106
W3PA	105

34 Zones

W5KC	125
W6UZX	120
W0EYR	120
W8BIQ	120
W2RGV	118
W8ZMC	118
W9MIR	113
W4LZM	109
W1BPH	105
W8UIG	100
W41WO	99
W8QBF	92

33 Zones

W5ASG	129
W9RNX	126
W9MIR	118
W9WCE	115
HC2JR	115
W2ZW	115
W5ALA	114
W9HP	114
W0ANF	112
W0PUE	112
W4LZM	109
W0ANE	106
VE3ZM	100
W2PQJ	100

Conducted by E. M. BROWN, W2PAU*

New Records!!

A series of six-meter band openings during late October provided plenty of thrills and DX contacts for the denizens of this unpredictable band. An outburst of aurora activity on October 14th and 15th started the band back to life. Then, on Sunday, October 16, the F2-layer MUF climbed above 50 mc, and the South Americans had a veritable field-day, working Ws from coast to coast and border to border. HC2OT's signals reached out as far as Canada, his reported QSO with VE3ANY was probably his best DX of the day. In Hawaii, KH6PP worked several LU stations in the late evening. This opening was not only for the early risers, but was practically a dawn-to-dusk affair. (The first signals broke through around 0830 EST and the last faded out about 2130 EST.)

On October 20 the MUF crawled up again, and the KH6 newcomers, OV and NS, jumped in and worked a number of W6s. The high spot of this opening came at just after midnight, Hawaiian time, when KH6PP worked VK2ARG, near Sydney. The signals were fluttery, but peaked at S9. This hop, over an all-darkness path, is another one for the experts to ponder over.

The following day good conditions returned to Hawaii, K6BF reported the band open from the U. S. west coast to the islands from 1325 to 1545 PST, KH6PP and KH6NS were worked with good signals. Apparently this was just a sample, for on October 23, W7QLZ reported working the same duo between 1600 and 1645 MST.

The cycle seemed to be repeating itself when, after a mild outburst of aurora activity on the evening of Thursday, October 27, the band again opened between the United States and South America the following morning. W1DJ reports that his XYL, W1OIR worked LU9MA at 0830 EST with solid phone signals between S8 and S9. More reports are coming in every day, outlining the extent of this opening. But apparently it was world-wide, because it has been reported that at 1600 PST on October 28, VK2ARG copied the six-meter signals of W9ZHL. The signals were reported as R5 and S4, 20 miles north of Sydney, Australia. On this same date, VE7CN worked KH6NS at 1443 PST.

Other reports are arriving every day. Those quoted were among the first to come in, and undoubtedly represent only a fragmentary sample of the activity that occurred during the eventful closing days of October, 1949. Fellows, watch that six-meter band and don't count it out for a while yet. It is full of surprises when it really gets going.

The 144.16-mc c.w. signals of FA8IH were heard by G6UH on October 17 at 1850 GMT. There seems to be little doubt as to the accuracy of this report, as FA8IH was later contacted on ten meters, by G6UH, and the details were fully confirmed. At the time of this reception, ground-wave conditions on the 144-mc band were only fair in England, according to our compeer, G2XC, VHF Editor, *Short Wave Magazine,* who reported that signals from stations approximately 100 miles away (to the north) were weak and fading, whereas under good conditions these signals are often over S9.

Coming as it did at a time when ionospheric activity was producing exceptional results on six meters all over the world, this report is certain to add fuel to any future discussions of the well-worn question "What mode of propagation?" During this period sporadic-E seemed to be undergoing a slack season, but auroral scattering,

---

**Associate Editor, CQ, Send contributions to E. M. Brown, 88 Emerald Ave., Westmont, N. J.*

F2-layer skip, what appears to be F2-layer rebound or back-scatter, and a few other unclassified and mysterious mechanisms of propagation were in evidence.

We are attempting to obtain meteorlogical and ionospheric data for this date, and they may throw some light on the problem. The distance of this hop, from Alger, Algeria, to Hayes, Middlesex, England, is approximately 1100 miles. This is not the first time that this distance has figured in similar reports of long-distance two-meter reception.

ONE OF THE TOUGHEST THINGS to get used to in this magazine business is the long time lag between the actual writing of the column and its final appearance in print. Here we are still experiencing warm weather, two-meter band openings, and all the other phenomena usually associated with the early fall season, and I have to remember to bid you all a hearty "Merry Christmas" in this column. This situation points out one thing that quite a few of the fellows do not appreciate, and that is that the news in a column of this type is of necessity over a month old. So don't be too hard on your reporter when the news you sent in last week doesn't appear in the very next issue.

During the past month better-than-normal conditions have prevailed on both the six-meter and two-meter bands. The biggest surprise of the month was a solid F2 opening on six meters on Sunday, October 16, between South America and the central and northern lattitudes of the United States. The opening extended all the way from the W1-region out to KH6-land, according to the meagre information available at this date. HC2OT, LU6DO, and LU9AS were the star performers on their end of the opening, and the list of stations worked by Steve, HC2OT, looks like practically the full roll-call of the RASO project! The Northern Lights have been acting up again, and several reports of aurora QSOs on both six and two meters are starting to come in. W3RUE of Pittsburgh, who seems to have exceptionally good luck in working out via the aurora path, reports QSOs on two meters with W9s in the Chicago area on October 14. Ground wave conditions on two meters have been pretty good, from our point of view. Of course, as compared with the previous month's record-breaking conditions, almost anything would have seemed like a let-down, but the fact remains that there were several evenings during the month when signals from more than 300 miles away were coming through in good shape. Remember when that would have been a record haul—only a little over two years ago? The situation now seems to be that the conditions are good, but the gang just isn't getting excited about them any more. The rag-chewing boys are starting to settle down for a quiet winter of local activity, and the DX set keeps thinking "maybe we can keep right on working this kind of stuff right through the winter." At least, the band continues to sound somewhat active.

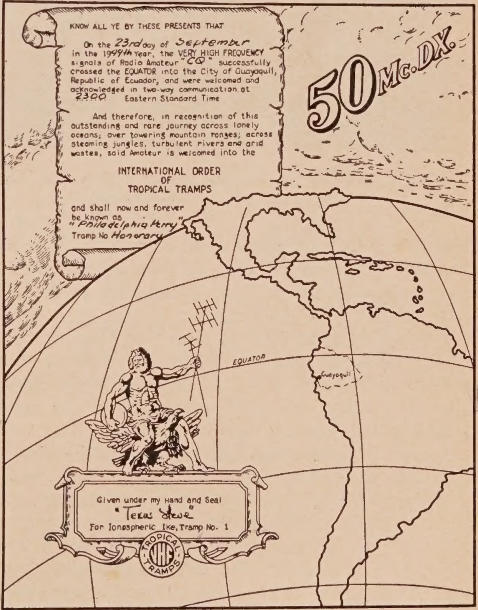
Since Christmas is just around the corner, this might be a good time to do some peeking into those packages that Santa has all wrapped up for the good little UHF operators!

First, he has a big one here on which we can make out the words "Increased Activity—Novice and Technician Style." It seems certain that in the very near future we will see the adoption of regulations incorporating most of the provisions of the FCC's recent proposals regarding the so-called Novice and Technician class of licenses. The only major change from the FCC's original plan was to re-word the requirements for the Novice class slightly so that now the only radiophone band which will be open to the novices will be that from 145 to 147 megacycles and—here is the important part—crystal control must be used exclusively. The Technicians will be allowed to operate only above 220 megacycles. Distinctive call-letters have been recommended for both classes of stations.

What's this package? (Gee, they wrap 'em carefully.) Hmmm — Haig & Haig, in a funny-looking bottle. Guess this must be that crystal-cleaning solution Doc Hayes promised me. Don't know when I'll get around to using it.

Here we have a little package labelled "Better UHF Tubes." The present race among the commercial interests to occupy the new UHF television assignments will undoubtedly produce many new UHF tube designs. The old reliable 832 and 829 were produced before the last war under the same kind of commercial pressure. The 4X150 is

(Continued on page 65)



KNOW ALL YE BY THESE PRESENTS THAT

On the 23rd day of September in the 1949th Year, the VERY HIGH FREQUENCY signals of Radio Amateur "CQ" successfully crossed the EQUATOR into the City of Guayaquil, Republic of Ecuador, and were welcomed and acknowledged in two-way communication at 2300 Eastern Standard Time

And therefore, in recognition of this outstanding and rare journey across lonely oceans; over towering mountain ranges; across steaming jungles, turbulent rivers and arid wastes, said Amateur is welcomed into the

INTERNATIONAL ORDER
OF
TROPICAL TRAMPS

and shall now and forever be known as "Philadelphia Harry"
Tramp No Honorary

Given under my Hand and Seal
"Texas Steve"
For Ionospheric Ike, Tramp No. 1

TROPICAL VHF TRAMPS

Specimen of the "Tropical Tramps Certificate" now being awarded to each station who works HC2OT. "Steve" Stevenson, the owner and operator of this station, and an old 5-meter DX man (W5DNN), uses this certificate in order to stimulate 50-mc activity between stations north and south of the equator. To date well over 75 North American 6-meter stations have this hanging on the wall.

ZERO BIAS

(from page 9)

analysis of each of the proposals can best be understood if we note that it took almost two hours for a simple reading of the presentation, without any time being taken at that point for discussion or questions.

Upon completion of the League's reading, the NARC and SARA representatives announced that they found themselves substantially in accord with the ARRL position, and that they felt that the League's presentation was completely acceptable as the position of a united amateur radio. Neither SARA nor NARC indicated an agreement with the ARRL position that the FCC had no legal authority to promulgate a set of rules such as those under consideration, but it was agreed that the moot legal point involved would have to be settled by further FCC hearings.

ARRL's Budlong ponders a point during the closing minutes of the conference.

It appeared at this juncture that the question of legal authority was wedded to the proposed regulations themselves, and that nothing could possibly be done about the swift enactment of the agreed-upon stand into regulations until the long course of oral argument and hearings before the Commissioners themselves could be taken. This was, of course, farthest from the minds and wishes of any of the groups represented, and several hours were devoted to searching for a course which might bypass this question. To some it appeared that all of our progress was to come to naught, since neither the ARRL staff members present nor the representatives of FCC were in a position to back down on the fundamental question. It was your Editor who led the conferees to the final agreement that the FCC could, if it saw fit, bring out a new "notice of Proposed Rule Making," incorporating the regulatory changes which the entire group had agreed to be desirable, and omitting any reference to government direction of the *course* of amateur radio, or any implication that the regulations in themselves were in any way responsible for the present high position of amateur radio. In this way the positions of the FCC and the amateur representatives would not be prejudiced if the question were brought up in the future, but the desired regulatory changes could become effective immediately.

Rollins (left) and MacClain, of the FCC, helped to keep things running smoothly.

Right now, as we see it, it is up to the FCC to act, and it appears likely that a new "Notice of Proposed Rule Making" will be issued shortly. Let's hope that it will be of the type which becomes effective in 30 days after issuance if no objections are filed, for a united amateur radio is awaiting the FCC's swift and proper bow to the will of the hams.

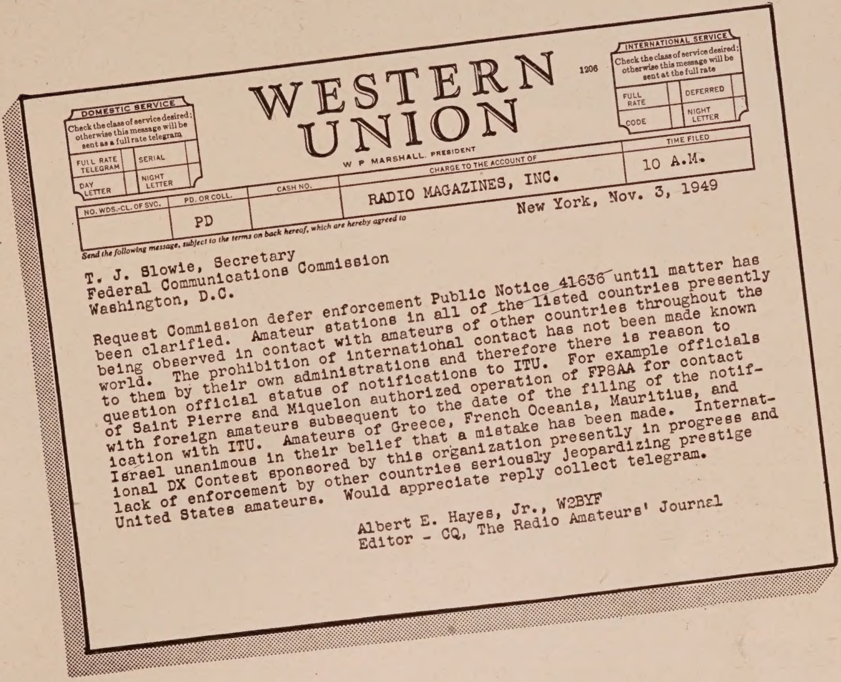
Gilmer and Wahn, NARC representatives, snapped during a pause in the proceedings.

Greetings

Greetings of the Christmas season!
To our readers and to our writers. . .
And last (but by no means least)
Greetings to our advertisers.

73
The *CQ* Staff

You wanted action. . .



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DAY LETTER ☐ NIGHT LETTER ☐

WESTERN UNION
1206
W P MARSHALL, PRESIDENT

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Send the following message, subject to the terms on back hereof, which are hereby agreed to

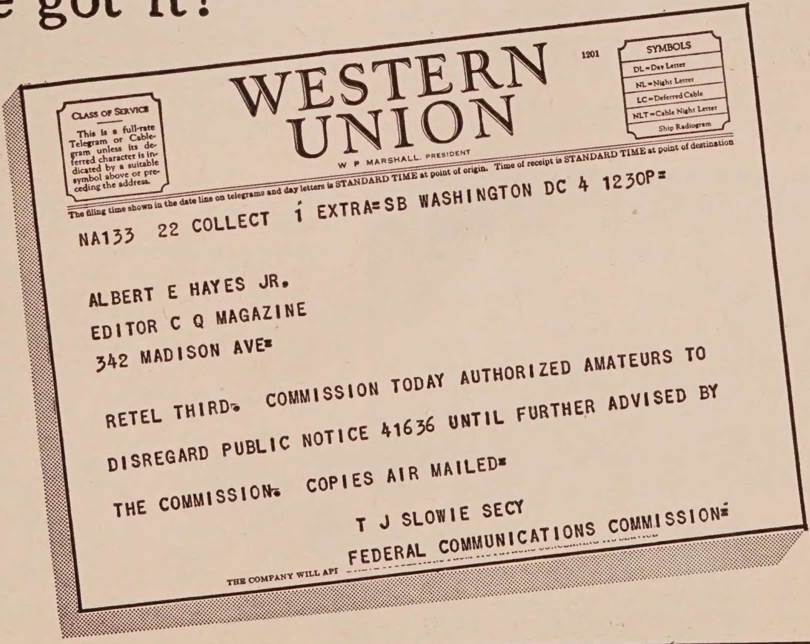
New York, Nov. 3, 1949

T. J. Slowie, Secretary
Federal Communications Commission
Washington, D.C.

Request Commission defer enforcement Public Notice 41636 until matter has been clarified. Amateur stations in all of the listed countries presently being observed in contact with amateurs of other countries throughout the world. The prohibition of international contact has not been made known to them by their own administrations and therefore there is reason to question official status of notifications to ITU. For example officials of Saint Pierre and Miquelon authorized operation of FP8AA for contact with foreign amateurs subsequent to the date of the filing of the notification with ITU. Amateurs of Greece, French Oceania, Mauritius, and Israel unanimous in their belief that a mistake has been made. International DX Contest sponsored by this organization presently in progress and lack of enforcement by other countries seriously jeopardizing prestige United States amateurs. Would appreciate reply collect telegram.

Albert E. Hayes, Jr., W2BYF
Editor - CQ, The Radio Amateurs' Journal

We got it!



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ALBERT E HAYES JR.
EDITOR C Q MAGAZINE
342 MADISON AVE=

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The YL's Frequency

Conducted by LOUISA B. DeSOTO, W7OOH*

Conventions still provide the highlight of the news these days, with big YL turnouts at the West Gulf affair in Dallas, Texas, on August 26-28th; the New Hampshire State Convention in Manchester, N. H., on September 17th; and the Hudson Division Convention in New York on October 7-9th.

The Dallas convention drew sixteen YLs, most of whom you'll see in the photo below. Also attending, but not in the picture, were W5TU, Rose Reiffin; W5DUR, Bruce Groves; W5LGY, Helen Douglas, and W5HEK, Fan Wells. District Chairman, W5OTU, Anne Maring, called a YLRL meeting and recruited for YLRL all the YLs attending who were not already members. She reports a marvelous time at the convention and a really fine program. "Much of the credit is due to the Dallas Amateur Radio Club, the hosts," says Anne, "for they not only made room on their full program for the YLRL meeting, but also made numerous announcements in our behalf, secured the photographer, and in every way possible gave the licensed YLs official recognition. Thanks to them we felt we were making YLRL history in District 5." Anne dug up all the news about the gals attending, so we'll pass on some of the items of major interest.

W5DEW, Mary, has held her ticket since 1931 and was the third YL in Texas to receive her license. The incentive? "The OM promised me if I got my ticket he would do the dishes every time." (Does he still, Mary?) For the past seven years Mary has been working as control operator for station KOLE in Port Arthur, Texas, and during the war she helped teach code at Port Arthur College. W5DEW holds Class A and likes to work 20 meters, her favorite frequency being 14,207. Mary has two jr. ops.—a married daughter and a grown-up son. Her OM, W5BUZ, works for the telephone company.

YLs attending the YLRL meeting during the West Gulf Division Convention in August. Left to right, Front row: W5MJU, W5DQF, W5JCY, and W5DEW. 2nd row: W2QUU/5, W5PFU, W5IZL, and W5JKM. 3rd row: W5OQT, W5IZK, W5OTU, and W5QIR.

W5DQF, Madie, was the fourth licensed YL in Texas, coming up with her ticket in 1933. In her case she made an agreement with her OM, W5-AMK, that if he'd learn bridge she'd learn amateur radio. He runs the Eidson Electronic Company in Temple and Madie is his official bookkeeper, plus keeping house for their 12-year old daughter and 8-year old son, and being active with the Girl Scouts. W5DQF operates all bands, 10 to 80, phone and c.w., running 250 watts into push-pull 812s. She has made WAC on 40 c.w. and is an honorary member of the Central Texas Amateur Radio Club.

W5DUR, Bruce, is the XYL of ARRL West Gulf Division Director "Soupy" Groves, W5NW, and since 1932 she has missed only two conventions. At this one, two of their three sons took the FCC exam. The fifth licensed YL operator in Texas, Bruce has held her ticket since 1933, and although she is inactive at present, when she's on she prefers 40 c.w. Bruce met her OM-to-be at Southern Methodist University and rumor has it that she had to promise to get her ham license before he would get the marriage license!

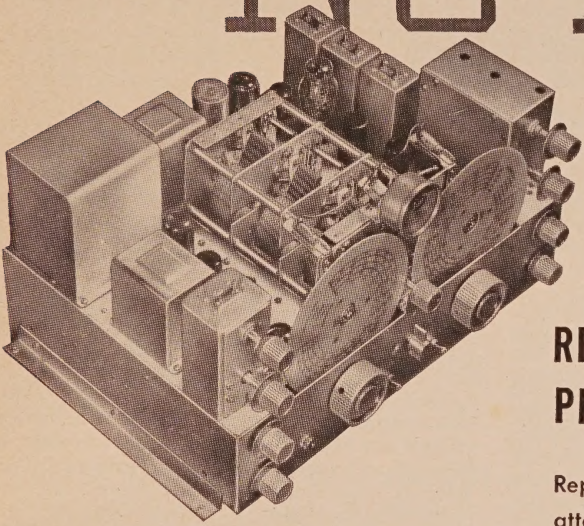
W5HEK, Fan, has held her Class A ticket since 1938 and has a 30 wpm code proficiency award. According to Fan she and her OM, W5HEJ, were bitten by the radio bug on Christmas Day, 1937, while visiting at W5GDB's in El Dorado, Ark. "We bought a license manual and a key and had code for breakfast, dinner and supper for months," says Fan, "then we took the exam and got our licenses together." Her rig is a Collins 30K-1, 375 watts on all bands, with a National NC-183 receiver.

W5IZK, Vivian, was one of the hostesses at the Dallas convention. Vivian is a registered nurse. The XYL of W5CFQ, she has held her Class B since 1940, and maintains emergency equipment.

(Continued on page 40)

Associate Editor, CQ. Send contributions to L. B. DeSoto, Verde Valley School, Sedona, Arizona.

NC-173



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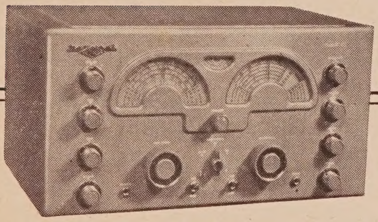

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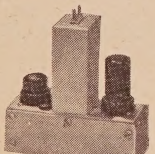

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MARS — Progress Report

Having completed a year's operations, MARS — the joint amateur arm of the Army and the Air Force — has racked up a really impressive record. A world-wide traffic network, groups throughout the country to assist amateurs in emergencies, and myriad training centers mark a successful operation. Quite a one-year-old!

November 26, 1949 rang down the curtain on the first year's activities of the Military Amateur Radio System. The Army and the Air Force point with considerable pride to the achievements of this joint amateur radio endeavor.

It was an uphill battle. There was no precedent for the MARS. The Army Amateur Radio System (AARS), disbanded at the outbreak of World War II, was the forerunner of MARS and furnished a basic framework on which to pattern the MARS, but it was a singly-administered system and was designed as a peacetime organization; the MARS looks forward to active public service in times of national emergency, including war, as well as the furnishing of a backlog of trained operating personnel to man Uncle Sugar's military communications network.

Many things planned are still not accomplished. MARS Chiefs each month receive queries from radio amateurs, many of them AARS members, wanting to know when they can join the MARS. The plan for civilian participation is still being worked out and will be made public as soon as possible.

What has MARS accomplished? Well, as the late Al Smith used to say, "Let's look at the record."

M/Sgt. George Nuttall, AF4PEL, and T/Sgt. Harry Simms, AF4HBD, preparing to get the inside dope on one of National's All-Band Tanks, as they lay out a new rig in the workshop at the MARS-Air Force Headquarters. Training like this is available for MARS members throughout the country.

MEMBERSHIP: MARS now has a joint Army-Air Force membership of 1500 stations.

NETWORKS: A vast interlocking network of stations has been set up through Army Area and Air Force channels. Member stations abroad provide links with U. S. Forces, Pacific; U. S. Forces, Far East; Europe; Greece; Turkey; Eritrea; the Caribbean; Alaska; and Newfoundland. All stations are assigned MARS call signs and use JANAP procedures on MARS frequencies.

SURPLUS GEAR: Many MARS stations and individual members have received spare parts and crystals. Some parts and pieces are put in service as is; others are used in experimental projects, chief of which are miniaturization, conversion and special adaptation of military equipment to amateur requirements.

EMERGENCY OPERATIONS: MARS stations participated in disaster emergency communications for the following: April, earthquake in Washington-Oregon area; June, Petersburg, West Virginia, flood disaster; August, Florida and east coast hurricane disaster; October, Texas and Gulf coast hurricane disaster.

ADVANCED TRAINING: Informational and technical articles on advanced electronics and telecommunications subjects are presented to MARS members. Further expansion of the training program is scheduled. Plans now include instruction in radar and guided missiles.

MARS to Use Disaster Frequencies

Because of the tremendous importance of amateur radio in times of emergency or disaster the Military Amateur Radio System is employing the 1750 - 1800 kilocycle band on a temporary authorization, in developing techniques and acquiring experience in disaster communications and related training. This is the band allotted for a "National Disaster Communications Service."

This 50 kc band (1750 to 1800) was allocated to the fixed, mobile and aeronautical radionavigation services at the Atlantic City convention in 1947. At the Fourth Inter-American Radio Conference in Washington, D. C., this summer, a suballocation was obtained, designating the band 1750 to 1800 kc for the fixed and mobile services only.

In an informal discussion with other interested federal agencies at the Federal Communications Commission in June, 1949, Commissioner E. M. Webster announced that he is preparing a plan for disaster communications which "will be presented in the future."

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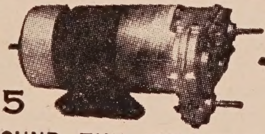

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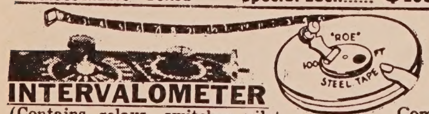

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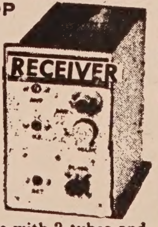

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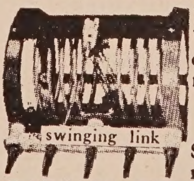

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Book Review

◆ ◆

Highways in the Sky, The Story of the AACS, by Major Louis Shores. Published by Barnes and Noble, Inc., N.Y.C. $3.

While this is not a new book (published 1947), we call it to your attention here, for there undoubtedly are many amateurs who have not yet read this saga of wartime pioneering made possible to a very great extent by radio amateurs. A biography of the Army Airways Communications System, it traces the building of the radio highways in the sky from the time the War Department issued the directive in November, 1938, ordering the creation of the AACS in the United States, until V-J Day seven years later when it had become a vast globe-girdling communications system of nearly 1,000 stations staffed by over 50,000 officers and men. When the war blow struck and personnel was so short, it was the amateurs who filled the ranks of AACS, hundreds of them shipping out to activate new posts after receiving the barest amount of basic military training, and taking over their usually difficult tasks with only their amateur experience for communications training. As well as a large body of the men, many of the top officers were hams, including Brig. Gen. Ivan L. Farman, commander of the System during the last year and a half of the war, and builder of the North Atlantic Airways.

Major Shores gives credit to the amateurs and their communication know-how in such passages as: "Farman's Hams, when they couldn't get equipment from the Army of the United States, did what they did in their home attics and basements with their own amateur sets—they improvised, and miraculously kept open the North Atlantic highway in the sky." In describing the blackout of high-frequency communications in the North Atlantic because of aurora borealis, Major Shores describes how the AACS men accepted the challenge. "Were they not Hams, just like their CO, Ivan the Terrible [Farman]? . . . . and if there's one thing a Ham always does, it is to experiment. . . . They risked court martial by trying unauthorized low frequencies, but by so doing kept the traffic moving and received only commendation."

While of especial interest to those amateurs who served in the AACS, "Highways in the Sky" is engrossing reading for all who are interested in the very great wartime contribution made by amateur radio. —*L. D.*

THE MONITORING POST

(from page 27)

together; among them are W1AJ, W1CQR, W2EG, W2EXM, W2JGA, W3SMY, and W8CBI. . . . Worthy of mention is copying Daniel Boone, W5GWT, in New England at 1:30 P.M. at RST-569 on 7 mc—40 watts input, and at 2 P. M. the same day, Oct. 15, W7BDL in Idaho at 569 in QSO with W1MMN . . . W1FTJ, nearing the century mark with 97 countries worked, is the XYL of W1BFT and sister of W1BH; some ham romance there somewhere . . . W3PVY tells us his greatest thrill in ham radio was his first QSO last month—that with W4PQZ—he has many more thrills coming . . . W1WU, heard for many years on most all bands, has an interesting job—law enforcement officer for the Commonwealth of Mass. and asst. capt. on a 60-foot patrol boat that covers 2,200 miles of coast, enforcing laws relative to marine life; the boat, originally built for rum-running, saw service in the Army during the war and now sails for law enforcement for Mass. . . . It is said that Mu, VE3BIG, makes many of the boys happy with her pleasant QSOs on 3535 kc after midnight . . . W1QCA is now putting in a quarter-kw Collins—will operate on all bands and he hopes to hit the DX trail . . . Now with his local broadcast station, WEIM, and formerly with the Merchant Marine and American Airlines, W1MVN is a Coast Guard vet and continues to enjoy brass pounding . . . W1TU/4 will be at Lantana, Fla., for the winter, and will be heard from Calif. after that, returning to Maine in the spring to enjoy the summer back home at Bar Harbor.

YL's FREQUENCY

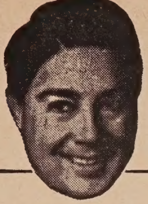
(from page 36)

W5IZL, Ruth, has held her Class B ticket since 1926, becoming interested when her OM and his brother kept her awake practicing code and building rigs. W5IZL divides her time between 10 phone and 20 and 40 c.w., holding a 35 wpm code proficiency award, RCC, A1 Operator's Club, WAS, WAC, and a Public Service Certificate earned during the hurricane of '47. Her station consists of an HT-1 transmitter, HRO-7 receiver, a 3-element beam and a long wire antenna, besides which they have a 17-watt mobile rig. Her OM, W5AWQ, owns and edits a newspaper, while Ruth specialized in advertising. Her second hobby is photography. They have two sons (one of whom is W5FYZ), one daughter, and three granddaughters.

W5JCY, Bertha, has held her ticket for nine years, and spends most of her time on 10 phone, Mondays and Tuesdays being the favorite operating times. She's made WAC, is always looking for DX, and is working hard on WAS/YL. W5JCY and her OM, W5ERY, who is an engineer with station KOMA, have three jr. ops, and for her second hobby Bertha raises parakeets. W5JCY, by the way, recently had an FB photo and writeup in a local newspaper.

W5JKM, Bernice, has appeared in this column before. Licensed since 1940, Bernice holds Class A and she helps her OM, W5AJG, operate the ARRL W5 QSL Bureau. Favorite bands are 6 and 10, with European DX on 6 to her credit. We hear that in 19 years of being married to a ham the Dallas convention is the first Bernice has attended!

W5LGY, Helen, got her ticket in 1945, although previously she had taught radio club code classes.



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"WORLD'S LARGEST DISTRIBUTORS OF SHORT WAVE RECEIVERS" during the war. Seems that hearing a Navy radioman send code on board a transport was what got her interested. She now holds Class A and operates on all bands, 80 to 10. Helen holds an M. A. in fine arts and has taught in several states, has been in the hardware business with her father, and has written many magazine articles. She has a number of other hobbies, including stamp collecting, puppets and marionettes, and a button collection.

W5MJU, Pauline, has been a Class A operator since February, 1948. Since then she has earned a public service award, is a member of the emergency net in Oklahoma and she handled traffic to Europe and to the Pacific Islands for GIs overseas. She runs 225 watts on 10 and 75 and, besides looking for DX, her special interest is trying to make WAS/YL. Becoming interested first in mobile operation, W5MJU has a 40-watt rig in her auto. She and her OM, W5JHA, who works for Cities Service, have twin girls, aged 8.

W5OQT, Sue, has just come up with Class A—in fact she found it waiting for her when she arrived home from the convention and says within 30 minutes she was on 75 in QSO with W5JBZ, who was her first 80 c.w. contact, too. Sue has been licensed since June, 1948, and has aided her OM, W5DRE, in the Woodward and Texas City emergencies. W5OQT operates VFO on 10 and 160 with Command transmitters, and her receiver is an SX28A. Sue enjoys photography (her OM works for Associated Press Wirephoto) and they have two jr. YLs.

W5OTU, Anne, our reporter for the Dallas convention, has held her Class B ticket since July, 1948. She is a member of the South Texas Emergency Net, the Hum Drum Net (local emergency and rag-chewing), and is secretary of the Rio Grande International Radio Club. She runs 40 watts into an 807 modulated by 6L6s, with an SX42 receiver and can work all bands, 160 to 6. Antennas are a 3-element wide-spaced beam on 10 and a 4-element wide-spaced beam on 6. Anne has been exposed to ham radio ever since she and the OM, W5KSW, were college classmates, but the bug didn't do more than nibble until one Christmas when she was short of pin money and instead of a present she gave her OM her promise to get a ham ticket. He held her to it and helped her with the code. Anne, whose second hobby is rock collecting, teaches school, keeps house and takes care of her two little girls, aged 4 and 6.

W5PFU, Johnibel, works at electronics drafting in aircraft radio and radar. It was after six years of this work that she became interested in ham radio, studied during her lunch hour, and came up with Class B in 1948. W5PFU operates 40 c.w. using a Meissner Signal Shifter for her transmitter, an HQ-129X receiver and a folded dipole antenna. Her special interests are her sons, aged 8 and 10, with other hobbies being square dancing and sketching.

W5QIR, Kay, just came up with her ticket this past August and was the "newest" of the YLs attending the YLRY meeting. Her jr. op is only eight months old, so she really must have been keeping busy. Her rig is a BC-459A and the receiver an HQ-129X. Of course it was the OM, W5PCC, who got her interested.

W3QUU/5, Faye, has held her Class B ticket since 1942. She and her OM, W2SKT, will soon have W5 calls. Look for Faye in 10 meters.

W5TU, Rose, formerly was W2TU. Rose and her OM, W5CWP, left New York City to live in Dallas where Joe is with Transvision of Texas. Rose, who has been licensed since 1932, is one gal who had her ticket *before* she married the OM, and we hear tell he married her to keep the 2-letter call in the family—hi! They have two jr. ops, Jimmie, 11, and Susie, 4.

East Coast Conventions

From W1FTJ we hear that the YLs had an FB time at the New Hampshire Convention. The fourteen attending included: W1MJE, Alice Morrison; W1MVX, Ruth Estey; W1QJY, Olga Apostolos; W1QJX, Charlotte Spaulding; W1MWI, Eleanor Blake; W1OAK, Ann Chandler; W1NUO, Tisha Young; W1QON, Eleanor Wilson; W1MDV, Louise Bruya; W1OME, Florine Belliveau; W1RYJ, Esther Routhier; W1HIH, Veronica Lavery; W1FTJ, Dot Evans, and W8UDA, Dorothy Willett. Adds W1FTJ, "Was so thrilled that W8UDA took my tip and came. She came via bus with only her seeing-eye dog with her—wasn't that swell!"

At the ARRL Hudson Division Convention the New York City YLRL sponsored a Tea Saturday afternoon, and these YLs signed the guest book: W1RYJ, Esther Routhier; W2MEG, Willy Grabner; W2PUY, Selma Tracer Goldman (Selma became Mrs. Goldman on September 10th, by the way); W2QWL, Mignon Rosenfeld; W2NQC, Violet Villar; W2QGK, Sophie Lash; W2RTZ, Hope Plummer (who has a nice writeup in the *World-Telegram*); W2PMA, Lillian Ruocco; W2RAQ, Catherine McFadden; W2OWL, Ruth Siegelman; W2QGB, Anna Friedman; W2ZPY, Dot Seaver; W2JZX, Viola Grossman; W2SWU, Lillian Getman; W2TBU, Kit Zionson; W2IXY, Dot Hall; W2SEH, Grace Clinton; W2BWB, Ruth Corbett; W2TWJ, Barbara Lakey; W2ZPR, Lillian Longley; W3CDQ, Liz Zandonini; W3LSX, Kay Barclay; W3CUL, Mae Burke, and W3NHI, Marion Kurtzner. W1RYJ won a portable radio and W2TBU won a microphone.

YL/OM Contest

Here is that contest for the YLs in which the OMs are *invited* to participate instead of being given the cold shoulder for trying to crash the party. The dates: January 21-22 and 28-29, using specified frequencies and specified times, devoting one period each to 80, 40 and 20 c.w. and both phone and c.w. on 10. There will be prizes for both the OMs and YLs. Watch for further details in the next issue.

The YLRL 10-meter net got off to a good start on October 4th. In case you have missed it, the time is 8-9 a.m. EST and 1-3 p.m. EST each Tuesday. W3NNS, Anabel, is net control on 28,900, but will tune the entire band. If you don't hear her, look for alternate NCS, W8ATB,

Here's the important new gear you need!

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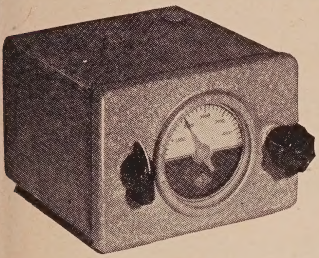

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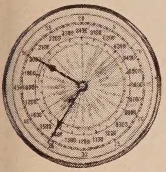

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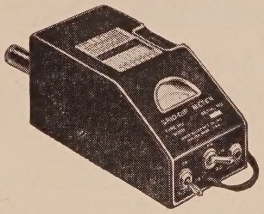

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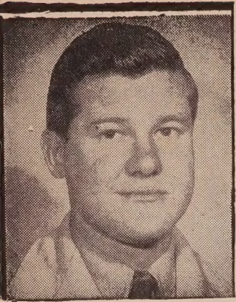

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1U5
1V
2A5
2A6
2A7
3A4
3A5
3B7
3D6
3Q4
3Q5
3S4
3V4
5R4G
5T4
5T4G
5U4G
5V4
5W4G
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6N7
6P5GT
6Q7
6R7
6S7
6S7G
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6SA7
6SC7
6SD7
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10Y
12A6
12A8
12AT6
12AT7
12AU6
12AU7
12AV6
12AX7
12BA6
12BA7
12BE6
12BF7
12C8
12F5
12H6
12J5
12J7
12K7
12K8
12Q7
12SA7
1201/7E5
12S8
12SC7
12SF5
12SF7
12SG7
12SH7
12SJ7
12SK7
12SN7
12SQ7
12SR7
12Q7
12Z3
14A7
14Q7
14X7
19
19T8
24A
25A6
25AC5
25L6
25Z6
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32L7
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35/51
35B5
35W4
35Z5
35Z6
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50B5
50C5
50Y6
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70L7GT
71A
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76
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78
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81
83
84/6Z4
85
89
117P7
117Z3
117Z6
VR90
1619
VR150
182B
183
482B
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954
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1626
1629
2051
2050
9003
307A
9001

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INDIANAPOLIS,
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TELRAD 18-A FREQUENCY STANDARD

Checks signals in the range of 100 Kc. to 45 Mc. with a high degree of accuracy. Self-contained power supply is 110, 130, 150, 220, and 250 V 25-60 cycle AC. Complete with tubes, dual crystal and instruction book. Brand new. Price....**$24.95**

RF TRANSFORMER

For experimental use. Covers four bands. Range unknown. Measures 4" x 4⅞" x 2¼". Brand new.
Price .... **.50**

HASH FILTER

Mounted on strip 3½" x 1". Contains two hash chokes & one dual .135 MFD 400 Volt bathtub condenser.
Price .... **.50**

COLLINS AN/ART-13 XMTR.

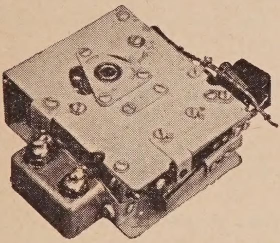
A compact, lightweight, modern, high-powered transmitter. Frequency range 2-18-1 Mc. on any of its 11 auto-tune crystal controlled or master os channels. Dec. 1947 "Radio" gives conversion data for convert. V. DC operation to 110 V. AC are in exceptionally fine con. tested in our labs. Weight,

(Dynamotor included) **$234.50**

BL-SELENIUM RECTIFIER

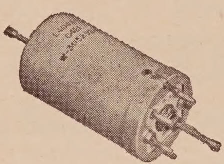
Type 23751, half-wave. Use 2 of these for full-wave circuit converting 110 V. AC to 135 V. DC at .75 amps. or parallel for higher current ratings. Voltage output controlled by condenser across output.

Brand new. Price......................**$1.75** ea.



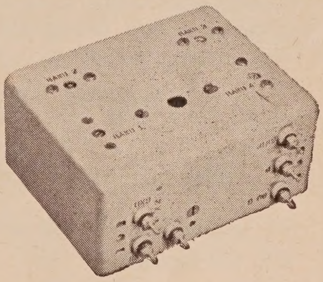
RACHET MOTOR

Operates from 12 to 24 Volts. Similar to motor used for automatic tuning of SCR-522 transmitter and receiver. This motor measures approximately 3" x 3⅞" x 1½". Has provision for coupling ¼" shaft. Ideal for remote tuning of mobile and other equipment. Rotates approximately 1 revolution per second.
Brand new..............Price **$1.25**



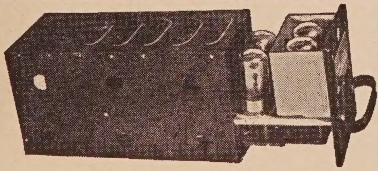
LOW FREQUENCY RCA I. F. TRANSFORMER

Used for R.F. power supply or double conversion transformer, etc. 3½" x 1⅞". Brand new.
Price **35c**



I. F. TRANSFORMER

2½" x 3-3/7" x 1⅝" marked 142.5 KC IF - 243.5 KC IF. Six connectors on bottom grid cap. Connection out of side. Trimmer condensers readily accessible. Brand new aluminum case. Price **75c**



TURBO AMPLIFIER

Used for parts—shipped complete with the following tubes: 2—7C5's, 1—7Y4, 1—7F7.
Price ....**$1.00** ea.

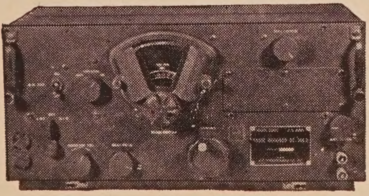
A TREMENDOUS BARGAIN
Quartz Crystals without Holders

Get an assortment of these and grind to your own frequencies or use them as they are. .5x.6" B-cut lapped on faces and squared on edges. (Ready to use). We will give you an assortment of these from approximately 13 thousandths of an inch to 24 thousandths of an inch whereby you can grind to frequencies desired. These crystals are now ground to the approximate following frequencies:

3880	4640	6225	7300
3900	4900	6275	7400
4140	5300	6700	7500
4600	5580	6850	7800
4650	5800	6900	7900

Formula for converting thicknesses of B-cut crystals to frequency is as follows: $F=98.4/T$ where F is frequency in kilocycles and T is thickness in inches.

AN ASSORTMENT OF 20
DIFFERENT THICKNESSES **$1.50**



BC-348 COMMUNICATIONS RECEIVER

6 bands, 200-500 Kc. and 1.5-18 Mc. 2 stages RF, 3 stages IF, BFO, crystal filter, manual or AVC. Complete with tubes and 24 V. dynamotor. These receivers have been thoroughly checked in our work-shop and found in excellent condition. Converted to 110 V. AC 60 cycle $60.00
24 v.d.c. operated suitable for airline use........................$100.00

ESSE RADIO CO.

ESSE WILL BUY

INDIANAPOLIS,
INDIANA

ANYTHING ELECTRONIC

Attention Factories, Hams, Dealers, Individuals

. . . just Anybody

Some of the equipment listed below is urgently needed by our company to meet the demands of customers and we will pay the highest cash prices. Send letter with full description describing condition and quote price. We will immediately answer and if we can use your equipment, we will authorize you to send it to us COD.

We are dealers in surplus electronics and we are interested in anything dealing with radio or television. We are especially interested in large quantities of surplus and anything that can be bought at a bargain price. Please don't hesitate to write us immediately. Quote us prices on what you have and give us a full detailed description. We will not answer any letter unless description and price is quoted.

WE NEED AT ONCE!

We Are Especially Interested in Large Quantities

BC-348 Receivers, AC or DC models
BC-312 Receivers
BC-221 Frequency Meters
SCR-522 Transmitters & Receivers
Hallicrafters BC-610 Transmitters
Any factory built transmitters and receivers such as Hallicrafters, National, Temco, Collins, RCA, RME, Hammerlund, Millen, Meck, Harvey-Wells, Meissner, Sonar, McMurdo-Silver, Gonset, Stancor, Bud, etc.
Amateur or commercial sets
Large stocks of tubes
Large stocks of transformers
Large stocks of condensers
Large stocks of resistors
Large stocks of speakers
BC-224 Receivers
BC-342 Receivers
Police type VHF transmitters and receivers for mobile application
Collins ART-13 Transmitters
APS-13's
SCR-269F or G Fairchild or Bendix ADF's
Headphones in quantity lots
Microphones in quantity lots
Field telephones
Sound-powered telephones

We are especially interested in any factories, dealers or other outlets giving us a list of surplus electronic equipment that is for sale so that we may submit our bid.

ESSE Radio Co

40-42 W. SOUTH STREET
INDIANAPOLIS 4, IND.

Unless Otherwise Stated, All of This Equipment Is Sold As Used
CASH REQUIRED WITH ALL ORDERS
Orders Shipped F.O.B. Collect

Esther, on 29,045 kc. For other nets, see October *CQ*.

W7HHH, Bea, reports a grand time at the hamfest at Mt. Shasta City, Calif., on September 10-11th. W7GLK, Dot, was there as was W7NTT, Lydia, both from Ashland. Lydia's OM is W7BQK, an old-timer, but Lydia's ticket was only ten days old at the time of the hamfest.

Latest sport out in this part of the country seems to be looking for uranium. From W7KAE, Lily May, we hear that she and OM, W7KAD, have themselves a Geiger counter and go prospecting every Sunday. Says Lily May, "Last Sunday I came home just eaten alive with mosquitoes, but we had a good time just the same. Made a day of it, took our lunch and just traveled around. Also took the portable 75-meter rig and had a QSO with Tucson to find out what the baseball scores were."

Any of you YLs looking for some DX? A note via W6ENV says MP4BAD wants to work a W YL. Look for him on 20 phone and c.w., but it will have to be fast, for he expects to leave Sharjah about December 1st.

Some newly issued YL calls: W5QKI, Mary Russell; W6HBS, Lucille Wiley; W7NTT, Lydia Crowson; W3PVH, Betty Keefer, and WØYHD, Genevieve Lukenbill.

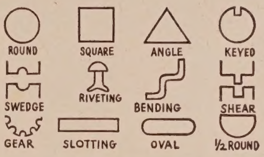
It's not exactly a new call, but we're sure glad to have it—W7OOH. It's been W1OOH and W2OOH, but we hope now it will stay W7 indefinitely. We'll be seeing you on the air with a new Collins 32V-1 (nope, no TVI out here!).

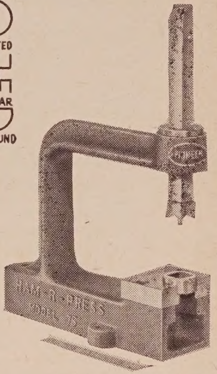
This W7 business seems to be contagious — YLRL President W3OLY, Helen Morrison, is now a W7 following her OM's transfer. Her new QTH is c/o USN Communications Station, Brainbridge Island, Port Blakely, Washington.

New YL Calls

It's been quite some time since we reported new licensees. Since our last list, these are newly issued YL calls: W8DWK, Margaret Rank; WØRAI, Claudio Gibson; W9GME, Grace Ryden; W9GRP, Mary Wood; W3PJL, Evelyn Ruchert, and W5PTI, Annie King; W2ZYH, Helen Habermann; W2ZZM, Agenes Frank, W1SAG, Marguerite Bourell; W5PUN, Burnice Van Ferguson; W5PUZ, Eleanor Palmer; W5PWN, Emma Hawkins; W7NJK, Marion Bue; W7NJS, Elizabeth McKay; KL7YG, Marjorie Sappah; W1SCS, Ruthe Ferguson; W4PEK, Sylvia Morgan; W5PYE, Dorothy McClain; W8EEW, Muriel Murtaugh; W8EFL, Mildred LaMorder; W9HDR, Claudette Robertson; WØUMX, Eva Cross; W7NLE, Estella Marshall; W8EAL, Cecelia Kelly; KP4JR, Dorothy Haberman; W5QCV, Alma Hague; W7NOF, Olga Saylor; W8EKL, Mae Goff; W2BNC, Helen Law; W4PNA, Marguerite Perdue; W5QFS, Bernice Stamps; KL7ZQ, Lucille Spargo; KL7ZR, Rose Cowles; W8EMB, Martha Robinson; W9HRI, Enid Dole; W4PNN, Emmie McAnally; W7NQG, Elsie Holt; W7NQL, Betty French; W2BQX, Phyllis Foss; W6GTT, Imogene Weston; W7NRG, Mary Knapp; W8EMJ, Jane Kohlmorgan; W2BTB, Jeanne Walker; W6GUS, Marie White; W2BWB, Ruth Corbett; and W5QIR, Betty Vandervoort.

THE IDEAL XMAS GIFT
New HAM-R-PRESS
TRADE MARK
by PIONEER





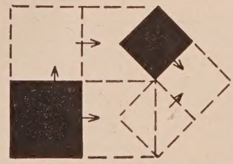
HAMMER BLOW POWER
MODEL H75
7½" THROAT
$16.95 NET
PUNCH AND DIE EXTRA
PAT. PENDING

NOW chassis punching in almost every size and shape may be done in your own workshop with the unique NEW PIONEER BROACH "HAM-R-PRESS". Punch mounting hole for ANY electronic part. Easily. No drilling. . . . Slip punch on ram. Insert die in work table. Lower ram to chassis and strike top of ram with hammer. Hole complete. . . . Some of its features: Simple operation—Precision alignment—Deep throat—LOW COST. **No Starting Hole Needed.**

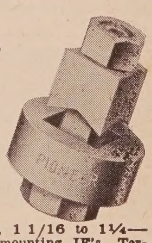
H50 —5" Throat. .$.9.95 H120—12" Throat.$24.95
H75—7½" Throat. 16.95 H240—24" Throat. .39.95

ROUNDS	Punches	Dies
⅛, ¼, ⅜, ½	$ .80	$ .65
⅝, 11/16, ¾, ⅞, 1, 1-1/16	1.20	.80
1⅛, 1-5/32, 1-11/64, 1-3/16, 1¼	1.20	.80
SQUARES—⅝, 11/16	1.25	1.00
¾, ⅞	1.50	1.25
KEYED—1 11/64	1.40	1.20
RIVETING SET—Requires Adaptor HAD-5		1.50
SHEARING SET—(1" length of cut)		3.75
CABLE SWAGER SET		2.75
DIE RAISER—3" high		3.95
HAD-5 ADAPTOR—For ½" and under dies		1.00

PIONEER CHASSIS PUNCHES
CUT ROUND-SQUARE-KEYED HOLES—



Type CS
Square
Punch
(Right)



CUTS ANY SIZE HOLE LARGER. SQUARES: ⅝ — $2.95, 11/16 — 3.25, ¾—3.50, ⅞—3.95 ROUNDS: ½ to ⅞—$1.95, 1—2.15, 1 1/16 to 1¼—2.30. KEYED: 1-11/64—$3.50. For mounting IF's, Terminal Strips, Sockets, Plugs, Meters, Controls, Xfrmers, Switches, Panel Lites, Etc. . . . SIMPLE HAND WRENCH SCREW ACTION. . . . CUTS CLEAN.

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SURPLUS RADIO CONVERSIO MANUAL IN TWO VOLUMES

This set of reference data has become standard for the most commonly used items of surplus electronic equipment. All conversions have been proven by testing on several units; each yields a useful item of equipment. For list of items covered see ad in **July 1949 issue of CQ** or write us.

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Editors and Engineers
LIMITED
1313 KENWOOD ROAD, SANTA BARBARA, CALIFORNIA

THE LATEST IN EXCITERS

(from page 17)

fact that harmonic output is always a certain percentage of the total output of a class C amplifier. It follows quite simply then that low fundamental power output means low harmonic output. This condition can best be achieved when the exciter is used to drive a beam power final amplifier. The writer is using this exciter to drive an 813 at 400 watts input.

One novel feature of the 829B stage is the method of obtaining a 180° phase difference in the driving voltage on the two 829B grids. To obtain this a 2.5-mh r.f. choke with *four* pies is used. The connecting wire between the two center pies is lifted carefully with a pointed instrument and unwound over the end of the choke several times until there is enough free wire to make a connection to a separate terminal. The writer used a small insulating strip on which three soldering lugs were mounted. The end leads of the choke were then fastened to the outside lugs and the looped-over lead was connected to the center lug. This produces a unit which can be handled and used without the danger of broken leads, etc. This method of coupling from single-ended to push-pull has been used by the writer in various other applications and has provided simplicity and efficiency each time it was used.

The output coupling circuit used here is about the most simple one of a number that were tried. It is the the old familiar pi network. The output capacitor of this network is a compromise value for the range of frequencies used and allows the output stage to deliver adequate power to a coax link circuit on all bands. The common lead connection on all five coils avoids the usual loss of power due to absorption and allows it to be delivered to the output link.

Tuning

To tune the exciter feed a 1800-kc signal from VFO or crystal to the first 6AG7. Turn the exciter band switch to 10 meters, which should be at the extreme clockwise position of the band switch. Then couple a 52- or 72-ohm coaxial link, closed at the far end, to the 829B output and tune the three slugs on the multiplier stages and the one on the 10-meter output coil for minimum plate current on the 829B. This completes the tuning for ten meters. After this it is only necessary to set the band switch for each band and tune the slugs on the 829B output stage for minimum plate current. The input frequency to the 6AG7 buffer is adjusted to fall in the center of each band for each separate adjustment. With 250 volts on the multiplier stages the plate current is 100 ma with all stages running. This happens when the output is on ten meters. The plate current on the 829B with a supply voltage of 400 averages about 50 to 80 ma.

(QSY to page 50)

IT'S HERE!

LEO'S 1950 CATALOG

What every ham has been waiting for!

YOURS FOR THE ASKING

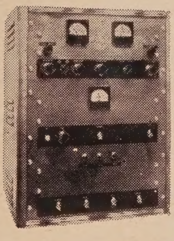
A brand new catalog containing the most complete listing of radio and television parts and accessories—everything for the radio man and the amateur. We feature well known nationally advertised brands at lowest prices. Get acquainted and save money dealing with WRL—"The World's Largest Distributor of Amateur Radio Transmitting Equipment".

SEND FOR YOUR FREE COPY TODAY!

NEW WRL "400"

GLOBE KING

"More Watts Per Dollar"



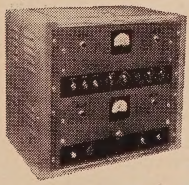
A versatile, advance design transmitter that gives efficient performance on all bands—10 to 160 on phone and CW. 350 watt phone—400 watt CW. Provisions for ECO. Complete with one set of coils.

WIRED	KIT FORM
$399.45	$379.45

Low Down Payments

Write For Detailed Specification Sheet

WRL 175 WATT GLOBE CHAMPION

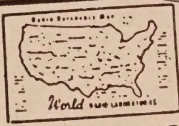


R. F. Section a complete 175 watt XMTR. Provisions for ECO. Automatic fixed bias on Final and Buffer.. Class B Speech Modulator. 175 watt input — 10 thru 160 meter bands. Complete with tubes, meters, and 1 set of coils.

$299.00 WIRED — KIT FORM **$279.00**

Low Down Payments

Write For Detailed Specification Sheet



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GEM OF THE SURPLUS

APS-13 TRANSCEIVER
"Charlie's" back with increased popularity. Ideal for citizen's band, 420 ham band, TV, or even the use for which this set was designed—short-range radar detection! Has 5 stages of 30 mcs. IF (6AG5), 2 stages of video amp. (6AG5) which feed into 2-2D21 for relay warning! Also 5-6J6 in the transmitter-receiver. Good cond. $10.95

WESTINGHOUSE 3 IN. METERS
0-10, 0-15, 0-30, 0-50, 0-100, 0-300 ma DC, and 0-15 VAC. Brand new. Each........ $2.99

ARC-5 RECEIVER
.19 to .55 mcs., 85 kcs. IF receiver. Ideal for "Q5'er" operation. Near new, with dynamotor........ $12.95

SPECIAL! METERS! $2.99 EA.!
3" G.E. 0 to 2 amps. RF, 0 to 5 VDC, 0 to 15 VAC,
Roller-Smith 0 to 15 VAC........ Ea. $2.99
2" Simpson, 0 to 3 VDC........ Ea. $2.99
3" Westinghouse, 0 to 300 amps, with external shunt, basic scale 0 to 15 ma........ Ea. $2.99

BC1608 VHF RECEIVER
2 RF stages, converter and oscillator, separately tuned, 5 stages of IF and 2 stages of video amp. with cathode follower output. Normal range of 150-210 mcs. Easily converted to higher or lower bands. 110 V. 60 cycle, power supply self-contained. Excel. cond. $24.50

PEERLESS Z-MATCHING XFORMER
Will match from line to line or mike to line etc. as follows: 50, 125, 200, 250, 333, 500 ohms on the primary; 500, 333, 250, 200, 125, 50 ohms on the secondary. Flat from 30 to 15,000 cps plus or minus 1 DB. Maximum level 10 DB (6 mw. reference level) New, boxed. $1.39

KY7 FLASH FRT KEYER
Designed to make any xmtr electronic for hi-speed polarized relay keying! Tube lineup: 6SL7, 2-6V6, 6H6, and 5U4 (not supplied). Self-contained 110/230 V. at 50/60 cycle power supply. New........ $15.95

BC-923 RECEIVER
4-channel automatic or manual tuning, self-contained speaker, xtal, calibrated heterodyne frequency meter, check point every 100 and 1000 kcs. The best for 10 meters mobile. A range of 27-39 mcs. FM or (by blocking out lim. and disc.) can be used for AM. Excel. cond. w/dynamotor. Each........ $23.95

SCR 515/BC 645 TRANSCEIVER
Ready for citizens' band with slight modification. Comes complete with: transceiver unit, control box, dynamotor, rack, all plugs and antennas. Brand new. Each........ $19.95

DM-35 DYNAMOTOR
12.5 V. at 18 amp. input; 625 V. at 225 ma. output. Used. $7.95

RECEIVER-TRANSMITTER SPECIAL
3-6 mcs. Receiver and a 4-5.3 mcs. or 5.3-7 mcs. Transmitter, less top cover. Used, good cond. With all tubes and crystal. Per Set:........ $6.50

BRAND NEW TUBES!
5FP7 Special. This month only........ 89c

12GP7......	Ea........	10.95	5CP1........	Ea........	1.50
5BP4........	Ea........	1.85	12DP7.....	Ea........	10.95
803...........	Ea........	3.50	211...........	Ea........	.29
813...........	Ea........	5.75	304TL.....	Ea........	.75
6SN7.......	Ea........	.65	8012........	Ea........	.99
117Z6GT.	Ea........	.95	5BP1.......	Ea........	1.50

COLUMBIA ELECTRONIC SALES
Department L-S
522 So. San Pedro St., Los Angeles 13, Calif.

Performance

The unit has been used by the writer for quite some time and has worked very well. The total variation in output over any band is not more than 15%. With the oscillator excitation removed and all stages running with maximum voltage there is no detectable instability. The ease and versatility of performance of this device has amply repaid the writer for the long hours of burning the midnight oil.

RST 519

(from page 23)

The better the selectivity, the better the signal/noise ratio!

In addition, a potentiometer in the B+ to the b.f.o. is a mighty potent weapon for c.w. men. The b.f.o. hiss may be knocked down on a "weakie" and a good db of signal/noise ratio may be eked out by this final refinement.

As a parting shot, I might add that all of these ideas will help in the long run when you are troubled by man-made QRN. The shielded line, the receiver matching, the isolated antenna relay; all will confine the pickup of these undesired signals to the antenna itself and will give you the best possible chance of picking out the desired signal.

* * *

"And now," the reader may ask, "after Jonesy-boy put in all these changes, is he hearing any more DX?" The answer to that is NO! Jonesy-boy has bought a TV set and spends his time watching Judy Splinters instead of chasing DX! May he Rest in Peace!

SCRATCHI

(from page 6)

letter to my rich uncle in Osockme, Hon. Uncle Watawad, I are explaining how my receiver are accidentally getting pushed off operating table.

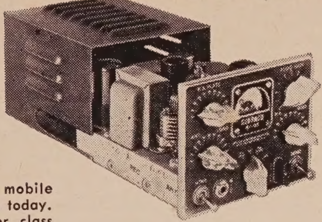
Of course you are knowing Scratchi well enough, Hon. Ed., to knowing that all the foregoing are stretching the truth a bit, but then I figuring that my relatives might as well be sending me things I can use for radio or for trading to other hams.

All these letters are being written several weeks ago, and I are still having hopes of a collossal Christmas, although several letters already coming back marked "Return To Sender, Addressee Not at This Address", or "Returned for Insufficient Address".

Which are reminding me, Hon. Ed., if you are sending me Christmas card, you can sending it to usual address, but if by any chance—whoops, excoose me, are just pushing microphone off desk and it are scattering to zillion pieces, woe is me—you are thinking of sending a parcel of some sort, addressing it care of Itchi's ranch. Many Happy Herald Angels.

Yours respectively,
Hashafisti Scratchi

HARVEY says Merry Christmas



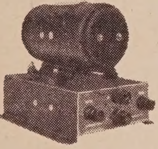
SUBRACO MT 15X

The finest in mobile rigs available today. 30 watts power, class B 100% modulation, with push-to-talk and built-in coaxial type antenna relay. Xmttr complete with tubes, coaxial antenna connector, mounting brackets, etc........................$87.50

MT15X for 20 meters..$87.50

MT15X for 75 meters..$87.50

(MT15X for 20 and 75 have same features as MT15X for 10-11)



SUBRACO DS400

Dynamotor supply. 6 V. DC input, 400 V. at 175 ma. output. Complete with built-in control relays, filter, etc..........................$59.95

AC Supply for operation of any of above Subraco xmttrs indoors. Complete with rectifier and built-in control relay..................$39.50

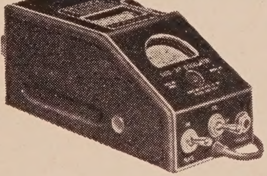
Millen 90810

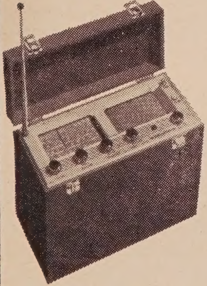
$69.75

HF transmitter for 2, 6, 10, 11 meters, rated 75 watts output. Crystal control or use 90711. Coils are available for 2, 6, or 20 at $3.60 per set. *Shpg. Wt. 25 lbs.*

MILLEN 90651 GRID DIPPER

Versatile test and design unit. 1.5 to 270 mc. Transformer power supply plus battery operation. Frequency calibrated drum dial. Measures only 3⅛" x 3½" x 7" plus inductor length. Complete with tube and inductors. *Shpg. Wt. 5 lbs.***$55.00**



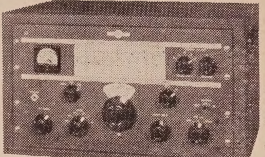


NEW Hallicrafters Portable Communications Receiver

For fall vacations or year-round use, BC and ham use, 4 bands—540 kc to 31 mc. Extra sensitivity for weak signal areas. AC, DC or batteries, whip or loop antenna. 8 tubes plus rectifier. *Shpg. Wt. 16 lbs.*........$79.95

Collins 75-A

$375.00



80, 40, 20, 15, 11 and 10 meter ham receiver. Automatic noise limiter, high sensitivity, double conversion. With speaker in matched cabinet. *Shpg. Wt. 93 lbs.*

COLLINS 32V-2 TRANSMITTER

Fine and coarse antenna loading controls on panel; trap circuits; front panel tune-operate switch; coaxial antenna terminal; harmonic attenuating network.

(We can have your 32V-1 factory-converted to a 32V-2 for $100.)

Collins 32V-2, with all built-in features........................**$575**

The new **Collins 35C-1** 50-ohm three-section low-pass filter, provides approximately 80 db attenuation of harmonic emissions at the television frequencies.

Collins 35C-1 low-pass filter..**$40**

NEW LYSCO PRODUCTS

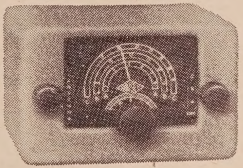
MOBILE VFO—Model 381. Calibrated for 80, 40, 20, and 10 meter bands. **Output:** 80 or 40 meters. 14 inch output lead with plug for crystal socket. **Power Output:** Sufficient to drive crystal oscillator of most mobile transmitters. Illuminated dial...**$21.95**

TRANSMITTER—Model 500. Calibrated for 160, 80, 40, 20, 15, and 10 meter bands.
Power Input: 25 watts on all bands. VFO or Crystals in 160 or 40 meter bands.
Power Requirement: 120 volts, 60 cycles, 50 watts.
Illuminated dial..**$87.50**

CONVERTERS—General: Illuminated dial. Full calibrated coverage. Power Requirements: 200 volts DC, .025 A, 6.3 volts AC-DC, 1A.

Model-130	26.5 mc. to 29.7 mc.	$32.50
Model-131	14 mc. to 14.4 mc.	$32.50
Model-133	3.5 mc. to 4 mc.	$32.50
Model-135	26 mc. to 30 mc. and 144 mc. to 148 mc.	$37.50

BEAT FREQUENCY OSCILLATOR—For mobile service. Power Requirements: 200 volts DC, 5 ma. 6.3 volts AC-DC, .150 A. Frequency: 1400 kc. to 1600 kc..**$7.95**

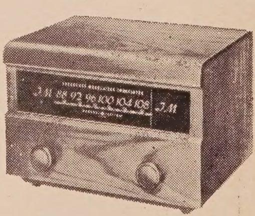


GONSET'S LATEST

The new converter which covers all bands from 3 to 30 mc. Same size as all Gonset mobile converters.
Model 3-30 ....**$39.95**

GE FM TUNER

Only a few left of this unusual buy. Covers 88-108 mc range, uses guillotine tuning. Designed for export and tropicalized, has power inputs for 110 to 250 volts, 60 cyc. *Shpg. Wt. 30 lbs.*



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Scoop Transformer for 7" & 9" Scope
115 v 60 cy. Sec. 3000v/5 MA, 720 VCT/202 MA, 6.4v/8.7A, 6.4v/.6A, 5v/3A, 1.25v/.3A with wiring Diagram........................**$4.95**

XMTR COILS AIR WOUND
40-80-160 MTR 14-18 MC, 8-10 MC, 2-3.5 MC, 5-7 MC ....**$1.19** ea.

Universal Output Xfmr Amer.
Silcor, Pri; 20,000/16,000/5,000/4,000 ohms. Sec; 500/15/7.5/5/3.75/1.25 ohms. 30 db Flat to 17,000 cy. Price..................**$3.95**

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80 Meter Conversion Trans..........................**$1.50**
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3 Pos. Sw. Eliminate BFO..........................**19c**
Fuses 3AG 10A..........................**8c** ea.
Condenser Kit 4—3 x .05 mfd........1—15 mfd........**55c**
Condensers .05-.01-.05 mfd, 3 x .05 mfd, 15 mfd **15c** ea.
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Variable Cond. Rec. & Trans..........................**98c** ea.
Dial Plates Rec. & Trans. 190-550..........................**10c**
Dial Plates Control Box 190-550, 3-6 MC, 6-9.1 MC **10c** ea.
Cond. Kit 2-5 mfd. 1 choke 5634, 1 choke 5546, 1 Trans. 692327-1..........................**98c**
RF CHOKE 2.5 MHY..........................**19c**
I.F. Can 6-9 MC Slug Tuned..........................**49c**
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H.F. Coil ESL 693-865 Slug Tuned..........................**19c** ea.
Complete Sets of Plugs. Write for Plugs Required.
Tubes: 12SK7, **57c**; 12SR7, **57c**; 12A6, **29c**; 12SF7, **57c**.

ARC 5 XMTR CONTROL PUSH BUTTON SWITCH.
Includes 7 push button switches, 1 control switch and two multicontact switches.
Price **$1.10**

Kit Vitreous WW Resistors..................20 for **$1.00**
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Kit Power Rheos. 25 & 50 Watt..................6 for **3.49**
Kit Rotary Switches Asstd..................6 for **1.75**
Kit Silver & Mica Condsrs..................50 for **2.00**
Kit Silver Mica Condsrs..................30 for **1.50**
Kit Controls 50-2 meg Pots..................10 for **2.00**
Kit Lugs Large Radio Elec. Type........100 for **1.00**
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TWO-METER R9'er

(from page 20)

The R9'er

The following material contains essentially the same information as that which appeared in the November-December, 1946, G-E *Ham News,* except that the material has been re-written and more information is given regarding constructional details.

The R9'er circuit diagram is shown in *Fig. 5.* This differs from the Two-Meter R9'er circuit in three respects. A switch (S1) is provided so that the R9'er may be removed from the circuit and the antenna connected directly to the receiver. A potentiometer (R_4) is provided so that the screen voltage, and hence the gain, may be varied. Plug-in coils are provided so that the R9'er may be operated on 6, 10 and 20 meters.

Basically the R9'er performs two functions. One, it acts as a preamplifier which has a relatively uniform gain over the entire band (50-54 mc, 28-29.7 mc or 14-14.4 mc). Second, it matches the receiving antenna to the receiver while covering this frequency range.

Because of the gain-bandwidth limitations inherent in this sort of amplifier, no capacitance other than stray is used in the input and output tuned circuits, in order that as high a gain as possible may be realized. The remaining controllable elements are the coil and its loading resistor. A moderately high *Q* coil with a loading resistor of known value has been used, as this is the simplest approach. The circuit would work equally well if the loading resistor were omitted and the coil were made to have a lower *Q*—one which equalled the overall *Q* of the previously mentioned coil and resistor in combination.

Impedance matching is achieved by means of C_1 and C_2 in the input circuit and C_6 and C_7 in the output circuit. C_2 is specified as a 100 $\mu\mu$f tuning condenser and C_1 as a 10 $\mu\mu$f fixed ceramic condenser. These two are in series across the grid coil. As the capacitance of C_2 is changed the effective series capacitance is altered but slightly, so that the LC circuit is not tuned to any great degree. However, tuning C_2 will change the ratio between C_1 and C_2 which changes the input impedance which the antenna feed-line sees.

Constructional Details

Figure 6 shows the complete R9'er and a plug-in coil. The cabinet is a 3 x 4 x 5 inch box. *Figures 7* and *8* show how the entire unit is mounted on the 4 x 5 inch cover of the box. It is not necessary to construct the R9'er in this size box. A larger cabinet is perfectly satisfactory if care is taken to obtain short leads for the important connections.

Piece *V* is mounted in the exact center of the front panel, and serves as the main support for many of the other parts. Two crystal sockets (Millen #33002) mount on this piece and serve as connectors for the plug-in coil. Metal piece *W* is the support for R_4. It is fastened to piece *V* so

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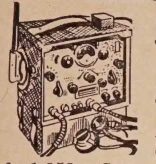


TBY8 TRANSCV'R

VHF Transmitter Receiver 28-80 Mc. In 4 Bands Voice or MCW XTAL Calibrated on 130 Channels. Uses 2-30 Tubes, 1-1E7, & 1-959. Comes with Carrying Trunk, Vibropack, Headset and Mic, Ant, Spare Tubes, Instruction Book, Canvas Carrying Case. Like New. Orig. $150.00. Tested for Operation **$59.00**

COMMAND RECEIVERS

Tested before shipping

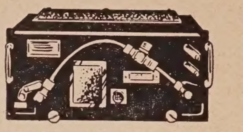
190-550 KC. Used.	**$11.50**
3-6 MC. Used.....	**4.95**
3-6 MC. New.....	**6.50**
520-1500 KC. Used	**24.50**

COMMAND XMITTERS

7-9.1. Like New...	**$ 9.75**
T-22 ARC-5. 7-9.1 New.	**12.75**
3-4 MC. Used.....	**17.50**
5.3-7 MC. Used....	**5.75**
T-21 ARC-5 5.3-7 New.	**6.75**
4-5.3 MC. Used....	**4.75**
T-20 ARC-5. New...	**7.75**
2.1-3 MC. Like New.	**12.75**

BC-1073 WAVEMETER

150-210 Mc, cavity Tuner w/precision Millen drive. The freq. checking device in freq. meter consists of a cavity tuning 150-210 meg. By using this cavity as a tuning unit for an oscillator, a pair of units will give an output from 0-420 meg. by beating them & taking the sum & diff. freq. These units come with calib. chart from 150-210 megs. Complete w/ 110 V AC 60 cy. power supply & 19 tubes. Used. 1 for **$24.50** 2 for **$39.95**



APS-13 WARNING RADAR

17 Tubes as follows: 9-6AB5, 5-6J6, 2-2D21, and VR-105. 410 to 420 Mc. and 30 Mc. IF. Brand New. With Instruction Book. Originally over $100.00 **$17.50**

SCR-522 VHF TRANSCEIVER

An all time favorite for all 2 meter ham operators. This unit consists of 2 chassis, BC-625 transmitter and BC-624 receiver, transmitter being xtal controlled and having an am output of approx. 15 watts. Provisions are made for metering all transmitter circuits. The transmitter can be used with T-17 carbon mike or 200 ohm dynamic mike. The receiver is a 10 tube superhet using 1 RF stage and 3 IF stages. The receiver has built in squelch and ABC circuits and is really one of the cheapest and most adaptable units for reception on the 2 meter band This versatile set comes to you in good used condition complete with all tubes, 2 xtals, AN/104 VHF antenna-new, and circuit diagrams. Take advantage of our best offering at this low price **$37.95**

BC-1068 RCVR

150-210 MC, input 115VAC 60 cy. Inductance tuning for RF, ant., 'dector & OSC. Has tuning ind. with few conversions. Makes good 2 meter or FM receiver. With 14 Tubes. Used. **$22.50**

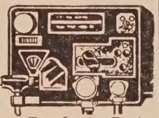
COLLINS AUTO-TUNE TRANSMITTER

2-18 megs 100 watt output. Uses 813 final, 811's mod. With tubes and xtal. Control Box & Calib. Book. Excel. cond..... **$169.50**

HIGH POWER AUDIO AMPLIFIER

First input stage parallel 6J7's feeding parallel 6L7's, feeding parallel 6C5's, impedance couple to input transformer. Power amplifier PP parallel 6L6's in class A. 40 watts output. Amplifier has built in limitor and volume compression circuits. The amplifier has 110V 60 cyc. power supply using 5T4 rect. Input 110V 60 cy. The maximum gain 100 DB Output impedance 225 ohms. Less 6J7's & 6L7's, unused, shopworn. **$59.50**

ARB-RECEIVER



6 Tube. 4 Band Super Het. Freq. Range. 196 Kc to 9 Mc. Covering Range Broadcast. Boat and Amateur Frequencies. The Unit also has facilities for Loop Input., with Tubes, Dynamotor. With all plugs, remote tuning dial, control box, and flex cable. Used Excellent. Originally $150. **$34.50**

ARC-5 VHF TRANSMITTER & MODULATOR

This excellent VHF combination consists of a T-23/ARC-5 4-channel xtal controlled transmitter using an 832A output tube. This set is equipped with coax switch for transferring the antenna to the receiver and is readily adaptable to conversion to 6 & 10 meter bands because of easy accessibility of turrett coils. The modulator consists of MD-7/ARC-5 which is a high level modulator using PP 1625's to modulate plate and screen of 832 amp. This compact unit comes to you with tubes, xtals, dyn. and AN-104 VHF antenna in good used cond. and diagrams at the low price of **$29.95**

APN-4 LORAN INDICATOR

Consists of ID-6/APN-4 Indicator, R-9/APN-4 receiver & power supply. Used. Also included following new equipment: 2 racks, cable & plug assemblies and antenna switch. All units complete **$59.95**

ASB-7 INDICATOR

Makes a beautiful scope foundation kit. Has 5BP1, 4-6AC7, 3-6H6. Can also be used for remote television indicator with conversion. In good cond. Orig. $30....... **$10.75**

BC-924 FM XMITTER

Freq. range 27-39 Mc, 35 watts output 4 channels, tunable throughout entire range, band width 20 Kc, ECO controlled, 2-6SJ7, 2-6J5, 1-6AG7, 1-6V6, 1-VR-150/30, 1-6SL7, and 2-815, has 12 V. dynamotor. Output 440 V. at 400 ma., complete with tubes & dynamotor............ **$21.95**

BC-221 FREQ. METER

200-20,000 kc. Accuracy 25 cyc. Checked. With calibration book. **$59.00**

600 WATT AUDIO OUTPUT TRANSFORMER

Primary PP parallel 805. Secondary 15-18 ohms. Freq. flat 1200-3500 cyc. **$14.95**

BC-348 RECEIVERS in working condition $74.50

AN-40 ANTENNA for BC-645. New 2.95

R-89/ARN-5 GLIDE PATH RECEIVER. With mounting. New......... 12.95

SETCHELL-CARLSON BEACON BAND RECEIVER, 200-400 kc. Used cond. w/tubes 5.95

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BA-23, Std. #6.......	10 for	**$1.49**
BA-30, flashlight cell....	25 for	**.59**
BA-36, 45 & 22.5 V.....	each	**.39**
BA-39, 150 & 7.5 V.....	each	**1.10**
BA-59, 45 V...........	each	**.39**
BA-1038U, Longer Life, mercury type for handie-talkie (BC-611)	each	**.79**
BA-40, 90-1.5 V.........	each	**.45**
BA-44, Hotshot 6 V.......	each	**.69**
BA-51, Std. Burgess XX45	each	**.69**

Large variety and quantity of other types available. Inquire.

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We are interested in buying all types of surplus radio and electronic equipment in its original form unconverted. We are open to all offers. Please send detailed description and lowest price.

EE-8 FIELD TELEPHONE Used. Good cond.......Pr. **14.50**

CHOKE 5 HY 450 MA. Black crackle case. New.... **3.95**

TBY ANTENNA

10 sections. Used. **$2.95**

SPECIAL!

APN-1 ALTIMETER TRANSCEIVER— 418-462 MC FM. With dyn. & 14 tubes. Excellent condition. **$5.95**

APN-1 INDICATOR— Basic movement 0-1 MA., 5 MA. shunt 270° dial. **$1.95**

VERY & HOT SPECIALS

FILTER CHOKE 11 Hy @ 200 Ma. Fully shielded. 2500 VACT test. New **$1.95**

LEACH RELAY 110 V 60 cyc. coil. Double pole single throw. New **.99**

815 TUBE. In carton. New............. **1.95**

1616 TUBE. For peak clipping........ **.69**

MODULATION TRANSFORMER. PP 807's to 2000 ohm RF load. .. **2.95**

HEADSET ADAPTER to match low impedance phones to high impedance output. New. .... **.89**

Minimum Order $5.00

TA-12B XMITTER—Comes with MP-28 Modulator & Tubes New......**$45.00.** Used Mod. C or B......**$29.50**

T9 APQ-2 JAMMER—200-550 Meg. For conversion to citizens band freq. New...........................**$15.95**

SCR-274N ANT. RELAY UNIT. contains 50 mmfd 5 KV Vacuum Condenser and 0-10 AMP. RF METER. Used, excellent.... **1.95**

M-299—Used for Replacing Dynamic mike with Carbon.... **1.95**

ARR-2 RCVR. 234-258 MC....................... **10.95**

GO-9 XMITTER—Brand New with tubes for Hi Freq. & Mod. Unit only. Consists of 3 Units. **HI FREQ. XMITTER** 3000-18000 Kc Band Switching. 837 ECO, 837 BUFFER, and 803 FINAL AMP. **LOW FREQ. SECTION** uses 801 OSC., 807 Buffer, 803 Final Amp. Freq. Range 300-600 Kc. **RECTIFIER UNIT** 5Z3 Low Voltage Rect., 2 Type 1616 HI V. Rect. Refer to surplus radio conversion manual for complete write up and conversion to 10 meters **$79.50**

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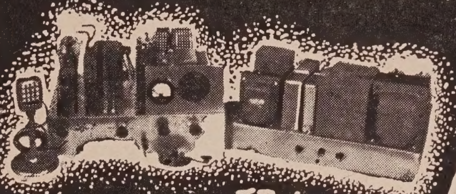
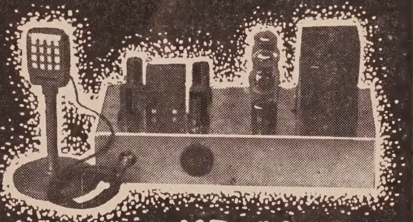


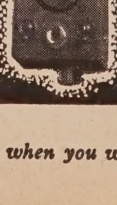
TR-1

TR-75



MD-40

HV-1500



GDA

Transmitter Kits — top quality components — complete to the last piece of wire at rock bottom prices that can be paid off monthly!

TR-1 transmitter kit. A conservative 300-Watt phone and c.w. rig 6V6-6V6-6L6-813, Class B 811 modulators. All bands, 80, 40, 20, 15, 11, and 10. Exciter broad band, single control PA tuning. Three power supplies delivering 1500 v.d.c. at 350 ma, 500 v.d.c. at 200 ma, and bias supply. Aluminum chassis, tubes, transformers, capacitors, resistors, antenna changeover relay, meter, wire, hardware and coils included. Electro-Voice 915A high level crystal microphone part of the package. Plug in the crystal and line cord and you're on the air.

Only $179.50 cash or $89.50 down payment plus six monthly payments of $15.75.

TR-75 transmitter kit. Loafing along at 75 watts this is the c.w. man's buy of the year. Simple enough for the beginner to assemble. Uses the time proven 6L6 oscillator-807 amplifier combination. Pi-network output. Husky power supply delivers 600 volts to the 807. Complete . . . not another bolt or wire to buy, including a smartly styled shielded cabinet to minimize television intereference. Unbelievably low priced at.............................**$34.95**

Md-100 medium power modulator. 100 watts of audio, this AM modulator is designed to be assembled once and put into action . . . with no maintenance problems. Lineup consists of a 6SJ7, 6J5 audio amplifier driving a pair of 6J5s which drive two 807s. It is an ideal modulator for the quarter kw c.w. rig and is another Eldico complete package. There isn't another thing to buy, it even includes an Electro-Voice 915 crystal microphone. At the low price of $44.95 this is the kind of post-war price the hams have been waiting for.

MD-40 low power modulator. 40 watts of audio, the MD-40 is a kit of the same superior parts that go into its bigger counterpart, the MD-100. In place of the 807s, two 6L6s are used. Complete, including the same standard communications Electro-Voice 915 high-level crystal microphone, only.....................**$29.95**

HV-1500 High voltage power supply kit. Here is a power supply that is designed to take it. Ultra-conservatively rated, will deliver under continuous service load 1500 v.d.c. at 350 ma. Kit includes plate and filament transformers, two filter capacitors and filter chokes, bleeder, safety plate caps, and all additional hardware, less 866 rectifier and chassis. The total cost is what you would expect to pay for the transformer alone. Complete kit price..........**$29.50**

GDA Grid dip Oscillator. The most valuable piece of test and measuring equipment in the hams shack should be the grid dip oscillator. The "Grid-Dipper" has taken the country by storm. Amateurs using it have saved countless hours in building, improving and de-bugging rigs. The GDA kit builds an exact duplicate of the Grid Dipper and includes everything from the special handy case permitting one-hand operation, down to a complete application and instruction book. Complete with tube and internal power supply, range 3 mc to 250 mc covered in six steps, size 5½" x 2⅜" x 3"....**$21.50**

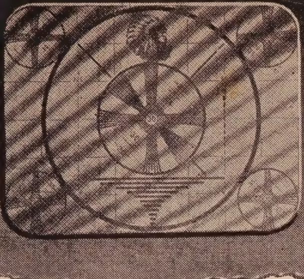
Kits or parts costing over $100 total price can be purchased for a reasonable down payment and small monthly installments. For full details on other kits ranging from 1 kw block-busters to low power ether ticklers send in a QSL or postcard to W2UOL. You can buy from a list of thousands of parts, including select government surplus. Every order receives the personal attention of Don Merten, W2UOL. Satisfaction is guaranteed on a money back basis.

**By special arrangement sold also
by HARVEY RADIO COMPANY, INC.,
New York City**

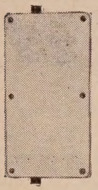
W2UOL's ELDICO OF N.Y.

44-31 Douglaston Pkwy.

Douglaston, L. Is.



TVI CAN BE Cured

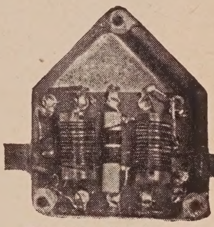


Transmitter
Dual Filter
— TVT-62 —

HERE'S HOW ELDICO PROVED IT!

1. At the Hudson Division Convention over 3,000 radio amateurs saw our TR-1 300 Watt Phone and CW transmitter using our dual TVI filter operating on 10-meter phone 28,686 KC and simultaneously watched the World Series—Channel #2 on television.
2. Measurements by certified equipment on amateur transmitter using our dual filter operating on 11 meters. (the worst possible band for TVI) showed a fundamental signal strength of 612,000 microvolts per meter, with no measurable second harmonic. This was not a relative test, but a certified measurement using the latest RCA Field Strength Meter and recorded in actual Government records.
3. Daily amateur customers at Eldico's retail store see these filters in actual "On the Air" tests. Open 9:00 A.M. TO 5:00 P.M. everyday except Sunday, Tuesday and Thursday evenings till 9:00 P.M. Come in and see for yourself.

SEEING IS BUYING A TVI FILTER



Television Receiver Filter
Available - TVT-300 For Twinex
- TVT-62 For Coax

HERE'S HOW ELDICO DOES IT

W2UOL's Eldico has gathered together all of the dope on TVI-ing, all of the data written by the experts and then with Eldico engineers collaborated, rewrote, tried and experimented and compiled their own "TVI Can Be Cured" booklet. Its now coming off the presses and available free for just a penny postcard requesting it. Available in quantity for clubs and organizations. Be sure to get your free copy before they are exhausted.

ELDICO LICKS TVI — FOUR WAYS

1. By complete shielding to prevent direct radiation from the transmitter.
2. By the use of line bypasses and brute force line filters to prevent kickback through the AC lines.
3. By the use of W2GX's M derived Low Pass Filter to prevent radiation of harmonics through the antenna.
4. By the use of W2GX's M derived High Pass Filters to prevent the overloading of the front end of the television receiver by amateur fundamental signals.

HERE'S WHAT ELDICO USES

- **Transmitter Dual Low Pass Filter**
  40 Mc Cut off—Over 80 Db Harmonic Attenuation. 52-72 ohm input and output. Good for 1KW input—Negligible fundamental attenuation. No effect on antenna performance.

Model TVD-62...............$ 7.99 in kit form
Coax Dual Filter 10.99 wired and tested

- **Receiver Hi Pass Filter**
  40 Mc Cut off—No attenuation to signals above 40 Mc. Efficient on any manufactured set. Will not effect picture, quality or strength. Available for coaxial or twinex installation.

TVT—300 for Twinex..........$1.98 in kit form
TVT—62 for coax............ 3.98 wired and tested

- **Brute Force Line Filter**
  Similar to ARRL's—Page 508 ARRL Handbook 1949 Edition. Will handle 1 KW—Completely filtered and shielded.

$5.98 in kit form
8.98 wired and tested

(Add 25c To Cover Packing and Shipping Each Filter.)

- **R.F. Shielding—Copper Mesh**
  The same type as we used in our TVI-Proofed TR-1 shown at the ARRL's Hudson Division Convention. Heavy Duty—tightly wound—it's expensive but the only thing we know which will do the job. Minimum order—6 sq. ft. 36" wide lengths. Per Sq. Ft. $.85 plus $.50 shipping charge regardless of quantity.
- **Shielded Cable**
  Multi conductor—To reduce radiation via power leads. all cables must be bypassed and shielded. 2. 3, 8 and 9 conductor shielded cable available.—#20 wire 600-1000 volts insulation.

2 conductor	.07	per ft.	$5.00	per	100 ft.
3 "	.08	" "	4.25	"	75 ft.
8 "	.15	" "	12.00	"	100 ft.
9 "	.16	" "	12.50	"	100 ft.

- **R.F. Bypasses**
  All AC Leads, power leads, relay and switch leads and every connection between chassis should be bypassed. Use our Hi voltage Ceramic for Hi Voltage, our button or feed thru's for medium and low voltages, our micas for AC, relay and switch leads.

HI VOLTAGE CENTRALAB 7500V working - 50 MMFD. Tapped for 6/32 screws—The best for RF bypassing—$ .89 each.

BUTTON CONDENSERS—available in various ranges and capacities. Automatically grounded through mounting screws
50, 100, 180, 500 MMFDS $.18 each $1.80 per dozen
2400 MMFD .... .25 each 2.50 per dozen

FEED THRU CONDENSERS. Just insert in hole in chassis, tighten nut and you have a feed through connection which is automatically bypassed to ground. Available in 50, 55 and 75 MMFD with nuts. 15c each—$1.25 per dozen.

Ceramicon Condensers—Axial type—Temperature compensated ideal for usage in small spaces—Available in 2.2, 3, 5, 15, 25, 50, 100 and 300 MMFD $ .15 each
1.25 per dozen

R.F. BYPASSING COMBINATION #1
Enough to do a thorough job on any amateur transmitter—Contains 6 Hi voltage ceramicons, 20 button 30 feed throughs and 20 ceramicons. A $16.00 combination for $8.95 per kit.

SHIELDED CABLE — COMBINATION #2
Contains 25'—2 conductor shielded Cable, 25'—3 conductor Cable and 25' of 8 or 9 conductor cable (your choice) A $8.55 combination for $6.95

TRANSMITTER FILTER COMBINATION #3
Contains one TVT-62 Dual Transmitter Filter, two TVR Receiver Filter (Your choice of 300 or 62 ohms) and one Brute Force Line Filter
A $17.99 combination for $14.98 in Kit form
A 27.93 combination for 22.50 wired and tested

COMBINED COMBINATION
Contains combination 1, 2 and 3 plus 12 square feet of H.V. duty copper screen—It's all of the material to really clean up the Kw rig.
A $41.58 combination for $35.00 in kit form
A $49.10 combination for $39.00 wire and tested

ATTENTION !

These filters are the direct work of W2GX and are sold only by Eldico in N. Y. C. and Harvey Radio Company, Inc. We'll bet you an 813 to a cat's whisker that within 30 days there will be dozens of copies selling for more or less. Be Safe—Order only the original—Our filters have been tested and proven—We guarantee them to have as good or greater harmonic attenuation as any filter being sold—Regardless of price.
W2UOL

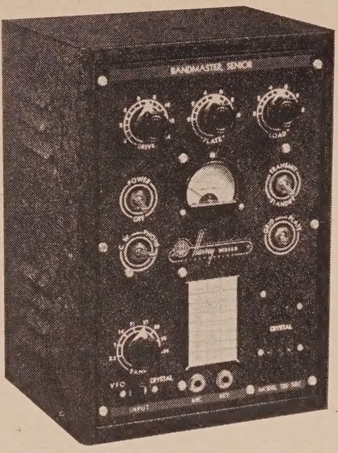
W2UOL's Eldico of N. Y., Inc.

44-31 Douglaston Pkwy.
Douglaston, L. I.
Bayside 9-8686 Flushing 7-9173

Here they are!!

A BRAND NEW LINE OF

HARVEY - WELLS TRANSMITTERS



100% Break-in Operation!

BANDMASTER JUNIOR

Meet the new streamlined, stripped-for-action version of the well-known TBS-50 at a popular price. We haven't just taken out the modulator to produce a top notch rig for the CW man—we've added plenty of features which the dit-dah gang consider necessities in their shacks—COUNT 'EM: optional crystal control or vfo input, 100% break-in keying with your external vfo (with one keying lead grounded) and a radically new crystal-oscillator-vfo switching circuit which helps even most sluggish crystals to follow your bug at 40 per. Old TBS features are included too, including band switching from 3.5 mc to 148 mc, integral antenna coupler and an excitation control to set the output level if you want to drive your gallon with the Bandmaster Jr. All this for only

$87.50

BANDMASTER JR. MODULATION KIT

You can add this at a later date. Kit is simple to install and comes with complete instructions. This kit makes a BANDMASTER SR. out of your Jr.

$15.50

BANDMASTER SENIOR

This is the new version of the old TBS-50 with all the new features of the Bandmaster Jr. including the new crystal-oscillator-vfo switching circuit. Phone or CW—Eight bands—80, 40, 20, 15, 11, 10, 6 and 2 Meters. Ideal for either mobile or fixed station use.

$111.50

BANDMASTER DELUXE

The last word in a versatile small transmitter for ham or commercial use. Used extensively in foreign countries for important commercial applications. Has built-in three tube pre-amplifier for use with crystal mike and ALL the features of both the Bandmaster Jr. and Sr.

$137.50

WRITE TODAY FOR CATALOG SHEET DESCRIBING BANDMASTER SERIES, POWER SUPPLIES AND ACCESSORIES

Harvey WELLS ELECTRONICS INC.

SOUTHBRIDGE, MASS.

that the potentiometer is 1¼ inches behind the front panel.

Piece X serves as the shield between the grid pin and the remainder of the pins on the socket. (Socket pin 2 is removed from the socket.) Switch S_1 is mounted on X and piece Y fastens to the rear of piece X. Metal piece Y shields S_{1A} from S_{1B} as is shown. The input connector is also mounted on this piece. The output connector and the voltage input connector mount on piece Z which fastens to the rear of V. Note the small grounding spring which is fastened to piece Z. This contacts the rear of the 3 x 4 x 5 inch box on the inside and insures that a good bond is made so that the entire box is grounded. The paint should be scraped away at the point where this spring contacts the box.

The plug-in coil arrangement requires a rectangular hole in the front panel. This hole is 1 13/16 inches wide and 1 9/16 inches high. One corner can be left partially filled-in to act as a key. The corner which has been cut off on this piece mates with the hole in the front panel and prevents the coil from being inserted improperly.

The plug-in coil is made as follows. The front face is a piece of 2-inch by 1¾-inch metal, 1/16 inch thick. The center supporting piece, which acts to shield the grid from the plate coil, is a piece of ½-inch aluminum, 1½ by ⅞ inches. The rear piece is polystyrene, ⅛ inch thick, 1¾ inches wide and 1½ inches high. A piece of thin metal also fastens on the rear of the polystyrene piece. It is of a shape that allows the two coil forms to fasten to it for grounding purposes. The machine screws which hold the poly piece to the main support piece also hold the grounding strip on and connect it to ground. Room is left between the two coils so that a second grounding spring, which is fastened to one of the crystal sockets, contacts the plug-in coil.

The coil forms on the plug-in coils are Millen #69041 and the pins are Millen #10029.

It is necessary to drill three holes (¾ inch in diameter) in the rear of the cabinet to accommodate the three connectors. The holes specified are large enough to clear the connectors.

Coil Winding Details

The coil table gives the details for winding both the grid and plate coils, but a few comments might be in order. A high Q coil is desirable, even though the loading resistors lower the overall Q of the system. Use wire with good insulation. Make certain the enamel is not cracked. With the wire size shown it should be possible to wind the proper number of turns in a single layer. Avoid a multilayer winding as it lowers the coil Q.

The values of R_1 and R_5 for the twenty-meter coil will depend upon the Q of the coil. For example, if the coil Q is 100, R_1 and R_5 should each be 25,000 ohms. For a Q of 75, the resistors should be 36,000 ohms. For a Q of 50 the resistors should be omitted entirely.

Inasmuch as very few amateurs are able to measure the actual Q, it is suggested that the resistance be omitted on the twenty meter coils. If the R9'er then seems to cover too narrow a band, resistance

WELLS TUBE VALUES!

TYPE	PRICE EACH
0A4G	$0.95
01A	.45
1A5GT	.65
1B22	4.35
1B23	7.50
1B42	5.25
1C5GT	.65
1D8GT	.95
1E7GT	1.95
1E7G	1.95
1G6	.65
1L4	.75
1LC6	.75
1N5GT	.75
1N21 (Crystal Diode)	.65
1N21A " "	.95
1N21B " "	.95
1N22 " "	.80
1N23 " "	.80
1N23A " "	.85
1N27 " "	.85
1N29 " "	.85
1Q5GT	.85
1R4/1294	.65
1S5	.70
1T4	.75
2A3	1.05
2A7	.85
2B7	.75
2B22/GL559	3.75
2C22/7193	.35
2C26	.35
2C26A	.45
2C34	.55
2J21A	11.45
2J22	9.85
2J26	8.45
2J27	12.95
2J31	9.95
2J32	14.85
2J33	18.95
2J34	17.50
2J37	13.85
2J38	6.95
2J48	12.95
2J61	27.50
2Y3G	1.20
2X2/879	.65
3A4	.35
3B22	2.65
3B24	1.75
3BP1	3.75
3C24/24G	.50
3D6/1299	.65
3E29	4,95
3FP7	2.95
3FP7A	4.95
3GP1	4.50
3HP7	2.95
3Q5	.90
3S4	.75
REL-5	14.95
5AP1	3.95
5BP1	2.75
5BP4	3.95
5CP1	3.75
5D21	24.75
5FP7	3.25
5GP1	4.95
5HP4	4.75
5J23	13.45
5J29	13.45
5R5GY	.95
6-4	.35
6-7	.35
6A3	.95
6A6	.75
6AB7	.95
6AC7	.90
6AK5	.80
6AK6	.80
6B4G	.95
6B7	.80
6B8	.95
6BE6	.65
6C4	.40
6C6	.70
6C21	19.25
6D6	.60
6E5	.70
6F6	.60
6G6G	.80
6H6	.45
6J5	.45
6J5GT	.45
6J6	.90
6J7GT	.70
6J8G	.95
6K6GT	.55

TYPE	PRICE EACH
6L7	.75
6N7	.75
6R7G	.75
6SA7	.65
6SC7GT	.70
6SF5	.65
6SG7	.65
6SH7	.40
6SJ7GT	.60
6SK7GT	.60
6SL7GT	.60
6SN7GT	.80
6SQ7GT	.60
6SR7	.60
6SS7	.60
6U7G	.85
6V6GT	.75
6Y6G	.75
7-7-11 Ballast	.35
7A4	.60
7A7	.60
7B4	.60
7C4/1203A	.40
7E6	.60
7F7	.70
7H7	.70
7K7	.70
7L7	.70
7N7	.70
7Q7	.60
10	.45
10T1 Ballast	.50
10Y	.45
12A6	.25
12A6GT	.25
12AH7GT	1.10
12C8	.50
12F5GT	.65
12H6	.40
12J5GT	.40
12J7GT	.70
12K8	.65
12SF7	.70
12SG7	.65
12SH7	.40
12SK7	.60
12SL7GT	.60
12SQ7GT	.60
12SR7	.60
12X825 2 amp, Tungar	2.10
13-4 Ballast	.35
14B6	.75
15R	1.20
REL-21	2.75
23D4 Ballast	.45
RK24	1.75
24A	.75
25Z6GT	.55
26	.65
27	.50
28D7	.40
30	.75
30 (VT-67)...For	.75
33 (VT-33) Walkie Talkies	.75
34	.35
RK-34	.45
35Y4	.65
36	.40
37	.40
38	.40
39/44	.35
45Spec.	.50
46	.75
EF50/VT250	.45
56	.65
70L7	1.05
72	1.75
RKR-73	1.25
76	.55
77	.55
VR-78	.65
80	.45
FG-81A	3.95
83V	.90
89Y	.40
VR-90	.65
VR-92	.65
100R	2.75
FG-105	9.75
VR-105	.85
VU-111-S	.55
114B	1.20
117Z3	.55
VT-127 British	.35
VT-127-A (Triode)	2.95
VR-150	.50
VT-158	14.95

TYPE	PRICE EACH
FG-172	19.75
205B	1.45
211 (VT4C)	.60
215A	1.75
221A	2.10
231D	1.20
268A	2.95
304TH	5.75
304TL	1.75
307A	4.25
316A	.75
350B	2.55
354C	14.95
371A	.95
371B	.85
388A	3.95
393A	4.65
395A	4.95
417A	14.50
434A	3.40
446A	1.55
450TH	17.95
471A	2.55
527	9.95
530	9.95
531	12.95
532A/1B32	3.55
GL-559	3.75
KU-610	7.45
HY-615	1.05
700B	7.95
700C	7.95
700D	7.95
702A	2.95
703A	3.95
704A	1.75
705A	2.65
707A	17.50
707B	19.50
708A	4.95
710A	2.45
713A	1.55
714AY	3.90
715B	9.75
717A	.85
721A	3.75
724A	4.25
724B	4.25
725A	9.95
726A	17.45
730A	10.95
801	.50
801A	.70
803	5.25
804	9.95
805	5.95
807	1.25
808	1.65
811	2.35
813	7.85
814	3.75

TYPE	PRICE EACH
815	2.85
826	.75
829B	4.95
830B	3.95
834	5.75
837	1.65
838	3.25
841	.50
843	.50
851	39.00
860	2.40
861	29.25
864	.45
865	2.55
866A	1.30
869	19.95
869B	27.25
872A	2.45
874	1.95
878	1.95
930 Photo Tube	1.00
954	.45
955	.55
956	.50
957	.45
959	.55
991 (NE-16)	.30
1005	.35
1148	.35
1201	.75
1023A/7C4	1.05
1616	1.25
1619	.45
1624	1.25
1625	.45
1626	.45
1629	.40
1630	3.95
1638	.90
1641/RK-60	.75
2051	.75
7193	.30
8011	2.25
8012	3.25
8020	3.25
8025	6.75
9001	.65
9002	.45
9003	.60
9004	.40
9006	.40
38111A	.45

NEON BULBS

NE-11	$0.24
NE-16	.24
NE-20	.06
NE-21	.24
NE-48	.24
NE-51	.06

PILOT AND FLASHLIGHT BULBS

Stock No.	Mfr. No.	Volts	Watts	Bulb	Base	Price Each
342-5	1256	6	21CP	S-8	DC Spec.	..$0.05
350-41	943	6-8	100CP	G-16½	Auto Soc.	.10
354-76	1491	2.4	.8A	G-7	DC Bay.	.09
LB-200	S6	115	6	S-6	Cand. Screw	.16
350-43	11A/T4C	18	.11A	T-4	Cand. Screw	.14
342-6	1245	6	3CP	G-6	SC Spec.	.08
LB-201	319	3	(Aircraft, metal housing, Ameer Lens)			
LB-202	328	24	(Aircraft)	T-1¾ Pressur	Pressure Flange	.40
350-40	64	6-8	3CP	G-6	DC Bay	.07
350-42	Spec.	12	6A.	S-6	Cand. Screw	.13
350-20	1446	12	.2 amp.	G-3½	Min. Screw	.07
350-14	49	2	.06	T-3¼	Min. Bay	.06
348-22	PR-10	6	.5 amp.	B-3½	Min. Flange	.05
350-19	Proj.Bulb	120	500 W.	T-20	Med. Pf.	1.45
LB-17C	24B	24	.035 a.	T-2	Tel. Base	.18
LB-58A	Nite Lite	110	7 W	C-7	Cand. Scr.	.17
LB-57A	53	12-16	1CP		Min. Bay	.07
354-78	Airplane headlite	24	239W	A-19	Med. Pf.	.38
350-55	323	3	(Aircraft)	T-1½	953	.22
342-3	LM-60	115	250W	T-20	Med. Pf.	.40
LB-102	1195	12-16	50CP	RP-11	DC Bay.	.14
342-2	CC-13	110	100W	T-8	DC Pf.	.33
354-76	1491	2.4	.8A		DC Bay.	.14
354-77	302	28	(Airplane type)		DC Bay.	.14
LB-104	313	28	.17A	T-3½	Min. By	.11
350-24	12A	12	.09-.11A	T-2	Tel. Base	.18
LB-107	24-A2 WE	24	.75-.105A	T-2	Tel. Base	.18
350-63	AR-1 Argon	105	2½W	S-14	Med. Screw	.22
LB-109	5122	Telephone	Type Neon	T-2	Tel. Base	.17
350-18	1477	24	17	T-3	Min. Screw	.16

WELLS
SALES, INC.

Order Directly from this Advertisement or from Your Local Parts Jobber

320 N. LA SALLE ST., DEPT. C-12, CHICAGO 10, ILL.

may be added across each coil until the band-width is sufficiently wide.

Adjustment Procedure

The R9'er should first be tuned to the proper frequency as explained under Tune-up Adjustments previously. When this job is complete it may be possible that either C_2 or C_7 (the input and output matching trimmers) is at either maximum or minimum capacity. This indicates that the R9'er is not providing an exact match, for either the input or output circuit.

If the match you are trying to achieve is from a pure resistance to a pure resistance, then the R9'er is capable of working over a range of resistance value as expressed by the formula:

$$\text{Input Resistance} = \frac{R_1}{\left(\frac{C_1 + C_2}{C_1}\right)^2}$$

Using this formula, calculations may be made to determine the range. Assuming R_1 to be 7000 ohms and the minimum capacity of C_2 to be 5 $\mu\mu$f, the range is from 58 to 3120 ohms. The same formula may be applied to the output circuit by substituting R_5 for R_1, C_6 for C_1, and C_7 for C_2.

If C_2 or C_7 is not on scale after the tuning is completed the difficulty may be either that you are trying to match to a resistance outside the range that the R9'er covers, or there is too great an inductive or capacitive reactance present in the system. Because the R9'er can match to a relatively wide range, resistance-wise, the trouble will probably be due to inductive or capacitive reactance. Therefore, if the two condensers mentioned are full in or full out an attempt should be made to remove this inductive or capacitive reactance.

Theoretically, the antenna feeder line may be lengthened until a resistive point is reached. Therefore, add a one-half wave length of line to the present feeder, and prune it, a few inches at a time, until C_2 peaks on scale.

The same thing can be done between the R9'er and the receiver if C_7 is not on scale. This may not be necessary if the receiver in one of those which has an antenna trimming control brought to the front panel. In this case it is only necessary to adjust this control, in conjunction with C_7, until C_7 is on scale and the signal is peaked.

UNDERCOVER TO CRETE

(from page 21)

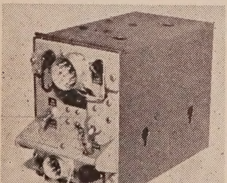
Then DL1DA for a local wound up the morning. Not so good, and no wonder, with 3 watts in the antenna! Of course, I may not have heard a slew of boys calling me.

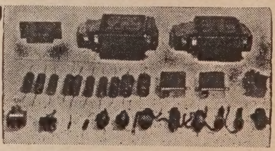
The pi-network final was changed to conventional single-ended, and an additional spare 8-mike condenser was added to boost the d.c. another few volts. The output came up to 120 r.f. mills. Wondered if the additional watt would do much better. (Don't laugh, you p.p.p. 304TL boys.)

Sunday morning up an hour late. 0555 first CQ nailed ole Charlie, W1FH, who was the instigator of the trip. He never misses much, either. The 578 wasn't too bad, for the "big- rig" with a bit over 4 watts. Then W3BES was next, Jerry on the spot, followed by W6GRL; ole Doc made me gleam with my QRP. He must have used extra ventilation on his final to poke through the East Coast QRM. Then, in quick order, we polished off W8BRA, W4BPD, W4OM, G2PL, G6ZO, W4NNN, F8EO and I1KN. That wound up the morning. At that rate, I figured I wouldn't get too many stations worked with just two days left.

Sunday afternoon I figured the receiver could stand a bit of souping up, because the regeneration control wasn't too smooth and was too touchy. Well, is seems never to fail while fooling around with different circuit combinations—I got the B supply across the filaments, and my spares were at home. I thought I might as well pack up and leave. There was one chance in a million that they might have some peanut tubes on the island, but then again, it was Sunday, and all the stores would be closed. I tried anyway. The first shop nearest the hotel was open, and after a bit of explaining he showed me some American surplus one-volt tubes, and I found a IT4. But no IS4. Instead, I took a 3Q4 with hopes of rewiring the filament connections on the socket. Those darn tubes cost me 60,000 Dracks, but I thought it would be worth it if my time would not be cut.

May 23rd was much better. Worked W1FH on





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POWER SUPPLY:
12 or 24 Volt DC input; output 275 Volt 110 MA.; 500 Volt 50 MA. Completely filtered and housed in metal case. These units originally used with MARK II No. 19 radio sets and cost Govt. $150.00. The dynamotors will operate on 6 VDC at approx. half the voltage, thereby giving you a good motor for car shaver or AC-DC radio operation and a power supply for your mobile receiver from your 6 Volt auto battery. This power supply unit contains all of the items pictured and described in the column to the right. Size: 8" H x 6" W x 10" D. Shipping Weight: 62 lbs.
Price—Complete unit—Order No. CPS #3..........$5.00
TERMS—SAME AS STATED ON OPPOSITE PAGE AD

FAIR RADIO SALES
132 South Main St. Lima, Ohio

Each Unit contains the following parts which may be purchased separately:

1—Dyn. 12/24 V input; output 275 V 110 MA.	$3.95
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8—.1 500 V Oil Tubular Cond.	1.00
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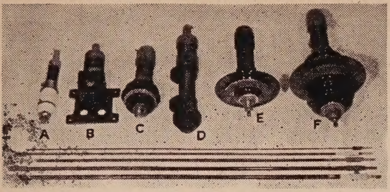
1—Spare Brush Kit	1.00
Also—Resistors, Plugs, Panel Chassis, Cable, Case, and Grill	3.00

WHIP ANTENNA EQUIPMENT



MAST BASES—INSULATED

A. MP-132—1″ heavy coil spring, 2″ insulator. Overall length: 11½″. Weight: 2¾ lbs. Price:...**$3.95**

B. MP-22—Spring Action direction of bracket 4″ x 6″ mounting. Price: **$2.95**

C. MP-57—2″ heavy coil spring, 5″ insulator..........**$3.95**

D. MP-48—2″ heavy coil spring, 3″ insulator..........**$2.95**

E. MP-37—2″ heavy coil spring, 8″ insulator..........**$3.95**

F. MP-47—2″ heavy coil spring, 9″ insulator..........**$5.95**

MAST SECTIONS FOR ABOVE BASES: Tubular steel, copper coated, painted, 3 foot sections, screw-in type. MS-53 can be used to make any length, with MS-52-51-50-49 for taper. Price—any section...............**50c Ea.**

CANVAS BAG BG-56 for carrying above mast sections ....Ea. **50c**

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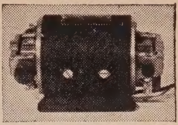

680 volts 210 MA. output at 12 Volt DC input. 6 VDC input; 300 Volt 150 MA. output. As illustrated. Size: 7″ x 4″ #DM-680. Price: **$7.95**

DYNAMOTOR—9 VDC input; output 450 V. 60 MA. 6 VDC input; output 275 V. 50 MA. with blower. #DM-9450. Price: **$3.95**

D-402—12 V. input; output 220 V. 100 MA. Price **3.95**

D-104—12 V. input; output 440 V. 200 MA., 220 V. 100 MA. Price:.......**$9.95**

CO-213 CABLE — Seven Conductor #20 AWG., two cond. separately shielded within an outer shield for all 7 cond.s. Insulated, rubber covered, 35 Ft. length......**$1.25**

4 Cond. Cable - rubber covered, shielded, 50 Ft. **$2.00**

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BC-453 Receiver 190-550 KC	**$12.95**
BC-455 Receiver 6—9.1 MC	**7.95**
BC-454 Receiver 3—6 MC	**6.95**
DUAL or TRIPLE RECEIVER RACK	**1.50**
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TRANSFORMER—F/Comm. Rec.—110 V. 60 cycle input; output 250-0-250 VAC. 60 MA.; 24 VAC .6 A. & 6.3 VAC. .6 A. No. CH-109—NEW: **$3.00**

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OUTPUT: 24 V.A.C. at 2 amps. CH-111..........**$2.25**

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CH-115—8 Henries at 500 MA. filter choke, 5,000 volt insulation **$9.95**

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CH-117—8 Henries at 700 MA. filter choke, 7,500 volt insulation **$14.95**

CH-118—5-20 Henries at 700 MA. swinging choke, 7,500 volt insulation **$14.95**

CH-121—15 Henries at 250 MA. filter choke, 1,500 volt insulation **$4.95**

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TRANSFORMERS — 110 VOLT 60 CYCLE PRIMARIES:

Sec. 12 V. 1 amp.	**$1.50**	Sec. 24 V. .5 amp.	**$1.50**
Sec. 24 V. 1 amp.	**1.95**	Sec. 36 VAC 2.5 amp.	**2.95**
Sec. 24 V. 2 amp.	**2.25**		

Sec. 14-14 or 28 Volt—7½ or 15 amp............ **4.95**

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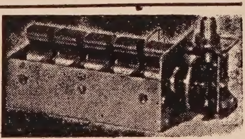

5 GANG with vernier tuning. 25 MMFD. to 450 MMFD. each section. Size. 7½″ x 3½″ x 3½″. Price: **$2.95**

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CHOKE—15 Hy., 250 MA. # CH-121..........**$4.95**

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30 Watt Transmitter with crystal oscillator control on four pre-selected channels — also master oscillator. Frequency coverage 2000 KC. to 5250 KC. by use of three plug in coils. Five tube operation, 801 oscillator, 801 power amplifier, two 46 modulators, and one 46 speech amplifier. Price with TU-17 Tuning Unit, 2000 to 3000 KC. and cable from transmitter to dynamotor. NEW: **$24.95** USED: **$19.95**

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PE-125 POWER SUPPLY for BC-223 Transmitter. Operates from 12 or 24 volts and supplies 500 volts at 150 MA. Prices: NEW........**$9.95** USED........**$7.95**

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Cable for BC-375 w/PL-59 ea. end..............**$1.75**

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c.w., who got me to go down and listen for him in the phone band. I heard W8HGW on phone so well at first that I answered ole Les, thus giving him a total of three new countries over here—TA, YI, and now SV6 (our YI4LKU QSO was the only one made with Ws while in Baghdad last November). Then W1FH and W1ADM, both phone, and a good S9.

A total of eighteen stations was worked for the hours in the morning. I was sorry that VK2DI, who had been calling me while I was busy, faded out when I was looking for him. Also, some VP1 station called, but he was smothered in QRM which at times sounded like ten electric organs playing in a two-by-four room.

Monday afternoon: Had some cards printed after some tall sign language and nosing around. They turned out 57 for me, and thank goodness, because I wound up 55 different QSOs.

May 24th: Turned the switches on at 0455, and the first thing I heard sounded odd for a call. It was someone calling JULES—a special friend, I supposed. Sure enough, it was my pal, W4VE, and what a signal, too! It was a pleasure to know Doc made it, as it turned out back in 1940 that Doc more or less talked me into joining the Air Force. That was when he was K6QYI.

By 0700 had all W districts but W7. Did hear 7VY, but he CQ-ed so long that my time was wasted, so I polished off W1HX for my last QSO at 0730. W1FH called again. I started to answer, but the house boy started to knock down my door. I had to do some quick covering and go to the door, yelling that I was awake and would be ready in a few minutes.

Anyway, I had more or less half decent QSOs with 55 stations in twelve and a half hours of operating.

I know it's our fault for answering stations that are offenders of good operating ethics, but, again, we wouldn't make many QSOs if we didn't answer most of them. Another must is trying to work *off* your frequency.

I hope to find several weekends this fall to be able to go to the Dodacannes Group, Island of Kios, and sign SV5AA. 73

TVI ON 160?

(from page 14)

plate tank coil should now be pulled out of the end of the coil slightly so that you are using the least possible coupling between the two tank coils and still getting proper loading.

When the coupling is correct, maximum antenna current will coincide with maximum plate current when tuning the output tank condenser to resonance and the plate condenser will not require retuning to minimum dip. If the coupling between these two coils is too tight, you will reach maximum antenna current before or after maximum plate current, depending on which way you are tuning the condenser and after you get maximum you will have to retune the plate tank for minimum dip. If the coupling is too loose you won't be able to load up the final enough. With correct antenna coupling there should be slightly more r.f., as indicated with a flashlight loop or neon bulb, in the plate tank than in the output tank. If the output tank tends to flash over or exhibits more r.f. than the plate tank, this indicates that the antenna coupling is not tight enough and should be increased by adding a turn or two. If the output tank condenser tunes broadly it indicates too tight antenna coupling. It should tune sharper than the plate tank. Generally speaking, if the antenna coupling is increased the coupling between coils must also be increased and vice versa. The main thing to strive for is maximum antenna current coinciding with maximum plate loading with no detuning of the plate tank.

After preliminary adjustments to ensure that all the coils hit resonance, which may all be done before applying any voltages, with a grid dip oscillator, the full plate input of 2000 v. at 200 ma for daytime or 1400 v. at 140 ma for night time may be applied for the final coupling adjustments.

Detail of the 813

The tube socket of the 813 is submounted 1½" below the chassis by means of long screws and spacers. The tube is surrounded above the chassis by a collar or shield 1½" high which is held in place by four small angles formed from some aluminum scraps. The two vacuum condensers are mounted by using the original clips from the SCR-274 antenna unit. Two of these clips are bolted to the chassis with 6-32 machine screws while the other two are mounted on a copper strap to tie the tops of the condensers together. A copper strap is bolted to the center of this piece and runs up to the 813 plate.

The plate cap for the 813 is also one of these vacuum condenser clips. The two vacuum condensers are inserted in their clips on the chassis so that the outer cylinder in the condenser is the one that is grounded. At least ½" clearance to ground is allowed around all of these copper straps so that the high voltage will not jump the air gap from one of the sharp edges.

The ½"-wide copper ground strap under the chassis to which all the 813 bypasses are connected is bolted to the chassis by the two 6-32 screws that mount the two vacuum condensers. The suppressor grid ground strap also mounts on these same two screws. Each of the two variable condensers in the output circuit has its frame grounded at four points by means of the mounting angles at its four corners.

In order to apply power to this r.f. unit to place it in operation it was necessary to have the unit within 3 feet of the relay rack so that the power supply cable would reach. The only available space was already occupied by an RCA 8TS 30 TV receiver. This being too heavy to move easily and because my tests had to be carried on simultaneously and in competition with "Howdy Doody" on channel 4, it was decided temporarily to park the 400-watt rig on top of the TV set. This being done it was checked for stability, free-

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CONVERSION DIAGRAM

and instructions complete with necessary parts. This kit consists of 3 tubes—2 speakers—1 speaker baffle (for remote speaker) 100 Ft. 2-cord cable—1 switch—1 line cord—2 etched plates—miscellaneous resisters—condensers—hardware—and all that is necessary to convert. New..**$8.25**

BC-604 TRANSMITTER FM 20-28 MC

11 and 15 meters. Can be operated on 10 meters—10 channel push button crystal. With all tubes and meter but less dynamotor.
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Crystals—Set of 80.. **14.95**

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Crystal Controlled Local Oscillator. Broad Band Pass — 20-7 MC I.F.'s. Complete with 7-6AJ5, 1-12SR7, 2-12SN7, 1-28D7, relays, crystals. Schematic furnished — used..............................**$7.95**

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Indicator: Uses 5 CP1, Loran. convert to test scope, panadapter, etc. Contains extremely accurate 100 kc xtal to time sweeps and marker pips at 2, 20 and 100 kc. Two parallel horizontal sweeps, obtain time differences between signals, between half power points on passband curves, and numerous other scope uses. Experimenters' delight! Use the counter circuits to try the new system of FM demodulation (July Proc. IRE) or to time camera shutters, 25 tubes. Condition: used, excellent. With schematic........................**$29.50**

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PE 206	**2.75**	**6.95**
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DM 53 ....3 for $2.00	**.95**	**3.95**
DM 32 ....3 for $2.00	**.95**	**1.95**

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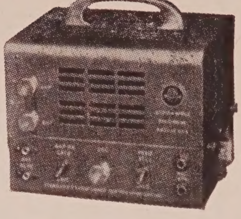

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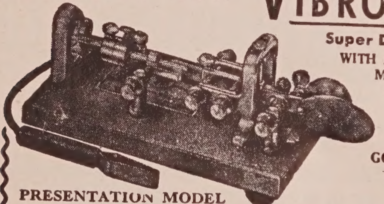

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dom from parasitics, neutralization, etc. The antenna coupling having been adjusted, the full power was applied and a CQ resulted in an immediate contact followed by several more all with very flattering reports. Finally someone remarked, "Wasn't that such and such a TV program they could hear in the background?" It suddenly dawned on me I had been running a 400-watt transmitter sitting on top of a TV receiver for more than an hour without TVI. I hurriedly checked and double checked each channel for TVI and could find no difference at all when the transmitter was on or off. To date there have not even been any reports of BCI even from the XYL.

One thing must be remembererd, however, and that is that a clean strong 1.8-mc signal can overload a TV receiver and cause TVI unless the TV receiver is equipped with a high-pass filter in the antenna lead-in and an r.f. filter in the power line. My TV receiver is so equipped.[2]

At the beginning of this paper we set out ten requirements for this transmitter and in checking over each of them we find that they are all satisfactorily met.

The bypassing and shielding in this rig seems to be completely effective, at least enough so that for the first time in my experience neutralization was not required on an 813.

The harmonic reduction is so effective that even the second harmonic on 3.6 mc was barely audible at one mile without the double-tuned plate tank, and with it, it could not be heard at all despite the terrific fundamental at that distance.

More than ever I believe it is possibile to build a TVI-proof transmitter from data already published for the lower frequency bands without resorting to wave traps.

One more thing, the 813 operated as outlined above, 1400 v. at 140 ma and 2000 v. at 200 ma, presents an r.f. load of 10,000 ohms to your Class B modulator transformer so be sure your multi-match connections are okay for this load. Also, there is no time like the present to include an overmodulation control such as a clipper or volume compressor in your speech amplifier to guard against spattering sidebands.

Antenna

Incidentally, my experience on 160 meters, which included establishing the first North American-European two-way 160-meter contact with G6FO back in the early 1930s, clearly indicates the necessity of a proper antenna if one is not only going to get out on the air but also if one is going to keep out of BCL sets. With this in mind we installed a half-wave doublet fed with 200 feet of RG-8/U coax cable with proper couplings and fittings. The coax runs from the rig under ground to the base of our 65 ft. lattice tower and then vertically to the top. The inner conductor connects to a wire 130 ft. long running east to the top of an old 65 ft. pine tree while the outer shield connects to a 130 ft. wire running west to a somewhat shorter tree.

---

[2] Rand, "Minimizing Television Interference," Electronics, June, 1949.

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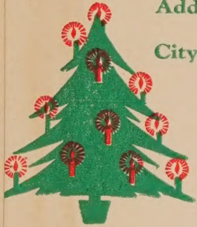

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SCREEN MODULATION

(from page 25)

feedback between the 6L6 plate and grid lowers its plate output impedance, so that a variable load does not produce as much harmonic distortion as it would without feedback. This might be considered an unnecessary refinement in most amateur transmitters since the harmonic distortion is not too noticeable even without inverse feedback.

The 6L6 is coupled to the r.f. tetrode tube or tubes for a.f., but not for d.c. It was desired to operate the 6L6 at a little higher voltage on its plate than would be applied to the r.f. tube screen during phone operation. The wire wound potentiometer in the d.c. supply to the r.f. tube screens permits quick adjustment from its normal c.w. value of 325 or 350 volts down to about 250 volts for phone operation. This adjustment, together with a moderate increase of antenna coupling, changes the transmitter from NBFM, or c.w. operation, over to AM phone.

The simplified circuit of *Fig.* 4 can be used with or without the feedback network of R_1, R_2 and C_2, as desired, for a screen-modulated transmitter running from 300 to 500 watts. The carrier output will be approximately one half of the d.c. plate input. The control-grid circuit should be driven as for c.w. operation, a factor which makes this scheme easier to adjust than cathode modulation.

General Considerations

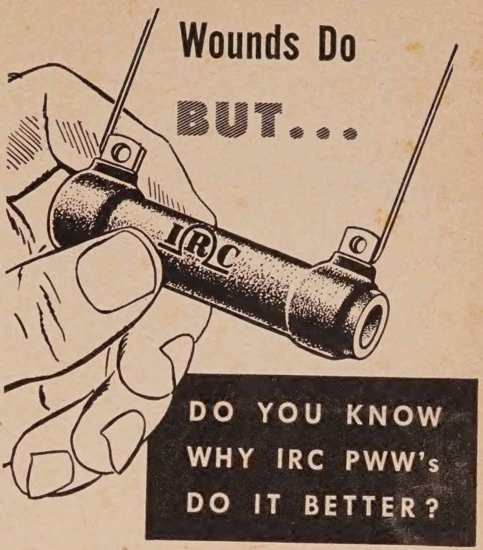
There are many types of modulators and r.f. tubes which may be used. In general, the r.f. tube d.c. screen-grid current will be 25% to 30% of its rated c.w. value when the d.c. voltage is reduced to about ⅔ or ¾ of its c.w. rating. A fairly good rule is to pick a modulator tube (or parallel tubes) which will draw at least 75% of the d.c. current at which the tube handbooks rate the screen of the r.f. tube. For example, if the c.w. ratings show a handbook value of 100 ma of screen current, the modulator by itself should draw at least 75 ma.

In conclusion, remember to use very heavy antenna coupling in order to get upward modulation of antenna current (and minimum or zero carrier shift), and reduce the d.c. screen voltage to about ⅔ or ¾ of the normal value. One to ten watts of audio will handle the a.f. requirements of nearly any screen-grid tube combination with the upper limit of 10 watts doing a fair job with a kw input to a pair of 4-250A tubes.

V.H.F.-U.H.F.

(from page 33)

a pretty good example of the type of UHF tube that the hams have been waiting for. It will put out about 200 watts on 220 megacycles. In fact, four of these little jugs are rated at 500 watts output in the TV broadcast service at over 200 megacycles. As a tripler to the 420-mc band this bottle will turn up about 25 watts of useful output. The big



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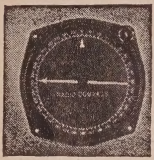

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hitch, as far as the hams are concerned, is the price. At this time it doesn't seem as though the tube can be produced for much less than thirty bucks, so we can expect the price to stay well above that level for some time to come, unless increased demands permit more efficienct production methods to be set up. In the receiving-tube department, we have hopes of getting tubes which are measurably better than the best commercial tube-types we now have, i.e., the 6J4 and the 6AK5. The much-rumored "pencil" tubes are due for commercial announcement early in 1950. Present indications are that two types of tubes of the same general mechanical design will be available, a high-mu high-trans-conductance triode designed especially for grounded-grid r.f. amplifier service, and a low-mu triode version designed for oscillator work. And here is the best part of the whole deal. During the development of these tubes, emphasis was placed on the cost factor at all times. It is hoped that they will be competetive in cost with any tubes we have today which can even come close to doing the same job. That implies that we might expect to pay less for a pencil triode than for a 6J4 or a 6F4, for example. Don't ask for any further details, fellows. This is in the nature of a prediction, not an announcement. When the new tubes are released, I'll try to get full details in the column. And, speaking about predictions, a great deal of hope is being held out for the "beam-deflection" type of tubes as being the answer to a VHF reveiver engineer's prayers. The present thinking on this idea seems to favor using these tubes as mixers. The principle is simple—an electron gun squirts a beam of electrons through a deflection system which is tuned to the input signal frequency. It doesn't require much power to wave a practically weightless beam of electrons back and forth slightly, even at ultra-high frequencies! The same beam continues to pass through the tube and passes through a second set of deflection plates (which can be nicely isolated from the signal-input system). The second deflection system is driven by the receiver's local

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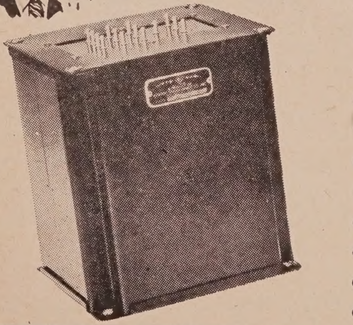

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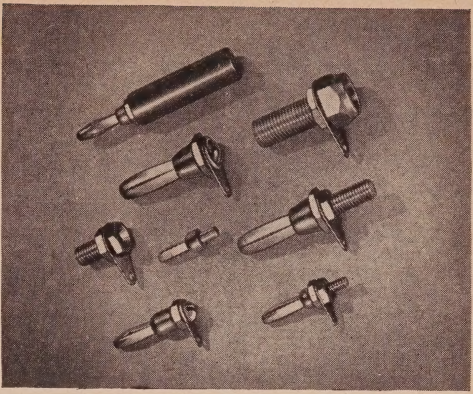
oscillator. The beam is then focussed on a collector wire, or slit, and it passes from there through the primary of the first intermediate frequency transformer. A definite i.f. beat between the local oscillator and the input signal is produced The chief virtue of this type of tube is that it imposes very little loading on the signal input circuit, so a high voltage step-up can be accomplished in the first tuned circuit. Good oscillator isolation is also obtained. Samples of this type of tube in converter applications have shown better noise figures than can be obtained from crystal mixers or from present-day r.f. amplifier tubes. Too bad that the idea hasn't progressed beyond the laboratory stages.

This is one of Santa's packages directed not to the hams, but to the opposition group. Many folks will wake up on Christmas morning and find a shiny new TV set under the tree. Fortunately for the hams, many of these sets will be of vastly improved design compared to some of the models which first flooded the post-war market. But *no* TV set, however good, can discriminate against radiation from a ham transmitter which falls inside a TV channel. Many of these new sets are going into homes where no TVI was experienced before simply because no set was there to pick it up. So maybe as a Christmas present we are going to get a new wave of trouble from our neighbors. And here I want to go way out on a limb and state that the VHF-UHF operators are in a far better position to deal with these troubles than are their less-fortunate brethern on the lower frequencies. At this time, harmonic radiation from our final amplifiers does not cause wide-spread grief. (It may, when UHF TV really becomes popular, but I'll bet we will have at least a year's grace on this problem.) Even the 50-mc operators are lucky, at least theoretically, in that only one of their harmonics lands in a TV channel. Take it from me, TVI is fairly easy to lick on the VHF bands. It is unfortunate that the popular SCR522 and ARC5 VHF transmitters put out so much radiation from the low-level stages on harmonics of 8 mc. They have given the gang a distorted picture of the true TVI problem. In my own case, the two-meter rig is breadboard and haywire, we run up to 400 watts input, AM, and our un-modified TV set runs along about ten feet from the transmitter without a trace of trouble. All cases of TVI which we have checked into have been found to be originating at the TV receivers and had to be corrected at that point. It is a comfortable feeling to know that even if the complaints do continue, it isn't really your fault!

Here we have a package so well wrapped up that we can't even venture a guess as to what it contains. It is labelled "Propagation Conditions." We do know that since we have passed the hump of the sunspot cycle, conditions should be getting steadily worse on those bands which depend upon ionosphere reflections for most of their activity. Conditions should continue to go downhill for another four years or so, and then we should have such poor conditions that the ten-meter band will probably be dead as much of the time as six meters is today. However, the big opening of October 16, unpredictable as it was, leads one to wonder. W2BYM was commenting on this situation the other night. Mel seems to think that the MUF is reaching up as high on peaks as it did during the height of the six-meter DX cycle. The difference



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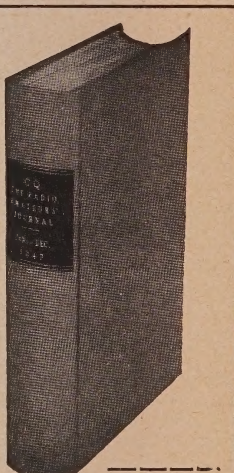
is, that it isn't coming up as often. The best way to deal with this problem is an automatic band-scanning receiver, like XE1FU's. The probable rate of occurence of Sporadic E skip is another big question mark. About all we can say on this matter is watch the MUF, have c.w. ready for aurora work, report all E_s contracts to Perry Ferrell, and don't be too proud to hook up with some of the gang on ground-wave whenever that opportunity presents itself. If the predictions are correct, and we are heading for a period of poor DX conditions, that groundwave work will be all that we have to keep the band occupied until Old Sol starts showing spots again. As for the higher frequency bands, about all that we can predict is the same sort of conditions that we have encountered during the past few years. Most of the work we have done on these bands has been done via the atmosphere, and so little is known about long-time trends in the weather that we are not in any position to predict trends in band conditions. One thing we are certain about is that Santa has in store for us a great deal of information about why our signals stick to earth during these tropospheric openings. Well-equipped research laboratories have been pushing work on this problem, the physicists and meteorologists think that they know some of the answers, but their findings are not generally available to the average ham. We have at least two authorities on such matters preparing articles for *CQ*, and when the facts are finally revealed, prediction of band conditions will be quite simple—just like predicting the weather!

We do not see many more mysterious-looking bundles in Santa's pack. There are some showing that are pretty obvious—new receivers, converters, towers and antennas, all made to order for the VHF hams; new designs of TVI-proof rigs which don't require a cutting torch to get to the inside, and . . . . what's this little gadget that just fell out of the pack? I'll be durned, a 144-mc crystal! Someone must have smuggled this one out of the laboratory through the back door! Have fun with your presents, fellows. Merry Christmas, and may 1950 be a gala year for the gang on the UHF bands!

Amateur Radio Vs. Television Broadcasters

Despite the formidable-sounding title of this paragraph, it won't be another re-hash of the TVI problem. It has often occurred to Ye Ed that the powerful TV signals which the broadcasters are putting on the air so close to our six—meter, two—meter, and 220-mc assignments might serve as a very useful yardstick of performance for the hams to shoot at. TV receivers are selling so fast these days, in all parts of the country, that there are very few hams who do not know of someone in the neighborhood who has a TV set. Even in rural areas where the TV signals are strictly sub-marginal except during band openings TV fans seem to be willing to go to no end of trouble and expense to dig those weak pictures out from under the snow. It seems to us that if someone in your neighborhood can pull in DX TV signals on his video receiver, you should be able to work hams on the adjacent ham bands over the same paths. Hold it—I can hear the gang saying "how about the high power those TV stations are using, and how about their big high antennas?" That was all taken into account in my figuring, which went something like this:

First, consider power. A high-powered TV station might be putting out about 30 kw peak power, taking into account the antenna gain. This is the "ERP"—effective radiated power—developed during synch peaks. The average power drops as a result of picture modulation. But let's use that estimate of 30 kw. How much power does the average VHF ham employ? The fellow with a 522



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may squeeze out about ten watts. The guys with the 829 finals may be getting fifty watts output if they are lucky. Plenty of fellows I know are running outputs in excess of 100 watts. We might pick a figure of about 30 watts as an average. To get the effective radiated power, we must include a figure for antenna gain. A simple five-element beam, properly adjusted, should provide a gain in the order of ten db—or ten times power. So we now have the typical modest ham installation putting out about 300 watts ERP. The commercial has us by a factor of 100 times in power, which is equivalent to ten times in field strength. Next, how about the big, high tower which he has and we can't have? In general, the field strength produced at a distant point is directly proportional to the height of the transmitting antenna above the average height of the terrain within a radius of several miles of the transmitter. Here in the East, and in the plain regions, a height of about 600 feet might be taken as typical of present-day TV practice. Our average ham will live at an average height, and let's equip him with a 60-foot pole for his five-element beam. In this department, too, the big fellows have us trimmed by another factor of ten times, which is equivalent to ten times more in field strength. So, we must admit that the field-strengths from typical TV stations should run about 100 times higher than the typical ham signals from the same area. Now let's turn our attention to the receiving installation. If we assume that the ham is willing to match whatever the TVL has up in the line of an antenna, and can put it at the same height, the receivers will see signal voltages that are just about in the ratio of 100 to 1. Speaking from experience, I can say that at 100 microvolts on the typical TV receiver, the picture is pretty poor. On my two-meter receiver a 1 microvolt signal pushes the meter up past S6. The average TV receiver has relatively poor noise factor. Other important considerations made it necessary to compromise the design—antenna feed-line matching, for example. On the other hand, if our typical ham has read W1KIM's articles carefully, and done a good job lining up his receiver, he should be scraping pretty close to the theoretically perfect noise level. Even neglecting differences in receiver techniques, there is a difference in the band-widths required of 4,000 kc for TV and 4 kc for double-sideband amateur phone work.

Since the noise power is proportional to band-width, the TV set inherently will have 1000 times more noise power output or 30 times more noise voltage output. Even if we could see good pictures at the same signal-to-noise levels as we can copy voice, which we can't, we are not so far behind after all! The same reasoning applies to two-way amateur work. If you can hear the other station, if your transmitter has as much power output as his, he **should** hear you as well as you hear him.

So, some of you guys who have been wondering whether you would be able to push a signal out of your location on the VHF bands, look around for a good big TV receiving antenna, follow the feeders down, and ask the owner what kind of results he has been getting. Unless I made a mistake somewhere in the arithmetic, it looks as though you should have about the same communications range as he has receiving range, provided you are willing to go to as much trouble as he did on the antenna. And make sure that there are active hams on the VHF bands which you may choose to exploit! Better line up those first QSOs in advance . . . . . .

Social Events Department

The past month seems to have been the high spot of the year as far as conventions, outings, picnics, beer parties, etc., were concerned. A fine example was set by the Midwest VHF Club earlier in the season. The South Jersey Radio Association outing on September 11 attracted over 200 hams from the area between Connecticut and Washington D.C. The Amateur VHF Institute of New York held a big get-together on October 2, at which a thorough representation of local VHF activity was in evidence. The big conventions over the week-end of October 8 were the Mecca of all socially-minded hams in the surrounding areas. One thing was pretty obvious

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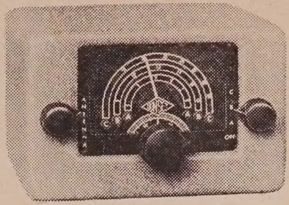

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about each of these affairs—the VHF-minded hams were in a majority. This phenomena is due, no doubt, to the fact that the hams working the VHF bands talk to their neighbors on the air. (Who else?) News of local interest gets passed around fast. The boys have common interests, common problems. They know what to expect from each other when they get together. And when they get together, they usually have a heck of a good time!

This neighborly status of our VHF bands is often forgotten when the DX starts rolling in and everyone trys to improve his equipment with the objective of talking to someone as far out of town as possible. But when the slack season comes, and the openings are few and far between, it sure is nice to know that there are stations remaining on the band in other locations, that you can set out on a trip with a mobile rig and still encounter activity.

It seems most necessary to me that we maintain the neighborly, local, "over-the-fence" activity on all our bands throughout the so-called "dead" seasons. It isn't a chore. It might even be fun. Try getting on the air and calling some of those locals that you haven't bothered QSOing since sometime last spring, and see if you still haven't a lot in common. An evening spent in this way is at least more satisfying than one spent in looking at that durned TV set, and who knows—you might stumble onto an unseasonable opening.

Two Meter Notes

In line with the preceeding suggestion, some individual in the Eastern Pennsylvania or Southern New Jersey area has revived the old "Windjammer's Association." Several stations in this area simultaneously received membership certificates, some of them were designated as officers, and the boys found that they had a going organization on their hands without anyone knowing whose idea it was! At the last reckoning, W2PEN of Runemede, N. J., was designated President, and W3TF of Temple, Pa., was Treasurer. Opinion is that Stut may be forced to resign, since he arbitrarily pegged the dues at $5.00 and set out with his little 30-30 to collect same! New members are being welcomed every day, and even on the stormiest of nights, we can hear the Windjammer's net holding down that big space between 144 and 148, which would possibly be pretty empty otherwise! Charter members are W2VX, W3PBR, W3NWQ, W3NAD, W3ADV, W3LNQ, W3MJB, W3NPB, and others.

W2ER, of Oceanside, Long Island, is back on the air and is working hard on his usual project—to have the biggest signal out of the New York area on two meters. He is now experimenting with a new beam patterned after the full-wave-spaced twin-five which your conductor is using. (Look for a description of this antenna in an early issue of CQ.) With his location, his relatively high power, and his persistence, Charlie seems well on the way to success. He should, however, do something about that 1068-A receiver he has been using for the past three years!

Can anyone give us any particulars on the nature of those "keyer circuit" signals which seem to emanate from the neighborhood of Washington, D. C.? There is one signal located just outside the low end of the band, on about 143.75 mc, and another at the high end on about 148.06. We have heard them keying NSS at times. The signals come through on horizontal polarization and they are almost always audible here in the Philadelphia area; they serve as wonderful markers and checks on band conditions. W2EH tells us that the signals we hear are harmonics, but this seems hard to believe. After all, they are consistent at this distance of about 130 miles, which is more than we can say about most of the hams that far away.

Here is a postscript to the story on the W0EMS-to-W4JIV record-breaking hop. We have checked the exact positions of the two stations, and our final figure on the mileage is 829.08 miles. Which brings up an interesting point. How many of you fellows actually know your position, in terms of lattitude and longitude? I must admit that I had to look mine up, t'other day! It is sometimes as hard as pulling teeth to find out exactly where a station is located, even after he has established what looks like a new record. Maybe we can start a new fad, of putting your exact position on your QSL cards. It might help settle a dispute sometime.

More on TVI

Last month we included a note about W2NGA and his results on low power using horizontal polarization. We got a note from Doc the other day in which he says, "I have 46 TV antennas within a 500-foot radius of my antenna in my Bronx location. I will return to the air in abount 3 weeks, vertically polarized. Why? TVI! Otherwise horizontal is better!" We passed this dope along to W2FXN, who is the local TVI expert. Bob agreed with Doc that a great deal of trouble is caused by overloading of the first stage in the TV receivers by the 2-meter signal. Intercarrier beats are produced, the desired signals are pushed down, and image troubles are arrgavated. So here we have the first definite verification of a theory which several of us have been clinging to for some time. In Ye Ed's case, we don't get any **more** complaints from horizontal than from vertical—maybe the neighbors just got tired of complaining. But our signal is clean (we hope).

DX AND OVERSEAS

(from page 30)

Dear Herb:

I have received your letter of October 18, 1949, in which you request information regarding Public Notice 41636 dated October 13, 1949, entitled "Radiocommunication Between Amateur Stations of Different Countries."

With regard to your inquiry as to whether "the FCC is forbidding communication with the amateurs in the countries listed," the answer is that although the Commission did not originate the prohibition, the Commission must enforce the provisions of the Radio Regulations of Atlantic City (1947) to the same degree as it enforces its own regulations, or provisions of the Communications Act of 1934, as amended. In other words, by virtue of the information furnished to the Commission as indicated in the Public Notice, United States amateurs may not at the present time communicate with stations of the various countries listed in Paragraph (a) of the Notice.

If a United States amateur engages in communication in known violation of the published prohibition, he thereby subjects himself to the same penalties which may be incurred for violation of the Commission's regulations which, as you undoubtedly know, may range from suspension of an amateur's operator license and revocation of his amateur station license to the criminal penalties set forth in the various sections of the Communications Act.

At the moment, the Commission has no information as to whether there is any possibility that any of the various countries listed in paragraph (a) of the Public Notice may change their reported positions in this matter. It is understood, however, that steps are being taken through the State Department to obtain pertinent information on the subject, but it will undoubtedly be some time before any definitive information will be received.

Sincerely yours,
George E. Sterling
Commissioner

(QSY to page 72)

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Fellows, it looks as though, for the time being, we are not to work any stations located in the countries listed under paragraph (a). Let's hope that the Governments of these countries see the light before too long, especially those in zone 26.

Newfoundland and Labrador

On April 1, 1949, Newfoundland and Labrador legally became part of Canada. As I mentioned last month, some discussion was had on how we would handle this in country standings. Since it is now impossible for anyone breaking into the DX game to work Newfoundland (as a country, that is), we have decided to delete it from everyone's postwar list which we have on file. This will allow you to continue accurate comparisons of totals on a country-to-country basis. We don't plan to go through the lists immediately and deduct a country from your list which we have on file, but as you send in additions we will make the deductions.

W9BZB works 10 phone, and during the past month picked up two new ones in VS6AE and ZS9F. He is now laying for ZS7D, VQ8AE, MP4BAE, VQ5ALT, and MD7HV on Cyprus. W5LEB says that if it is true that some of the boys are promising Fords to get QSL cards, it looks as though he will have a long white beard by the time he gets enough cards with this system for WAZ . . . . No, I don't have any inside dope on coaxing cards out of these fellows.

If any of you overseas stations want to work Utah, W7JYI is a good one and he operates c.w. and phone. Since he is not on too much, it might be better to drop W0AZT a line, and he in turn will see that his pal W7JYI gets on the air.

W6RW sends in some new countries this month, and they arrived in a nice fuchia-colored envelope. Sure nice . . . the countries, I mean! . . . W6ETJ is fast finding out that his 250 watts and a Zepp do not hold up too well with the kilowatts and rotary beams. . . . W9ABA is happy after hooking HB1EO/HE, FE8AB, and VQ2GW. G6ZO has salted away HI8WF, VP5BD, and FP8AA. It looks as though Jim finally worked an LX who sent him a QSL card. This one was LX1AS.

W9ANT has received cards from PK5RU and CR4AD. Thought this might be of interest to some of you.

It is good to see the following new ones in the Honor Roll: CE3AB on phone, W9HP, W6JWL, W2AGO, and W6EYC. How many of you have noticed that W6BIL lost his place as low man in the WAZ section? Shucks! He's second from the bottom now, the cellar position is for the moment being held by W7KWA of Reno with 40 and 98. This is no discredit, however, because some of the boys have tried to go after the 40 zones with less emphasis on the countries.

XE1AC still knocks them off, the latest being HC8ME on the Galapagos Island. In fact Al has received his QSL card already, and, of all things, HC8ME uses a BC-375E and operates for the time being only on 40-meter phone. Taint fair, is it gang? However, you might chase him on c.w., frequency is 7292. XE1AC also worked FY8AC, XZ2SY, and VQ8AX. By the way, XE1AC has a new P.O. number; it is P.O. Box 19311.

W6GRL is doing a little A3 work lately, and a few he has raised via this method are CR5UP, ZS8A, and AB8BC. . . . KP4KD is tickled after working ZD9AA with VP5XX thrown in for good measure. Ev is having a heck of a time getting zone 18, since all the UA0s he works seem to be in 19.

VO6EP has added some stuff including PX1B and PX1C, who, Art says, are probably in the same class as practically all the other PXs.

W6MEK is handling all QSLs for PJ. In the past, getting cards to different PJs has been rather touchy, so this word from W6MEK should be welcome news to many of you.

W6EHV, down in San Diego, still finds time to add a few. For example ST2TC, FN8AD, FE8AB, VU2DX, EK1AE, and VR4AA. Burt also worked a station signing YJ1AR, and since there are rumors that this guy might be around Chicago, he isn't too sure what country it will count for. While in the San Diego vicinity, we shouldn't overlook W6BZE. New ones for Dick include HZ1KE, VP8AO, 4X4CR, UG6AB, KB6AJ, ZS9J, VK9NR, and PJ5TR.

W9IU has recovered from an appendix operation in which the Doc, while prowling around inside of him, said he found one plug-in coil for an old Pilot Super Wasp, two elements of a slop jar rectifier, two UV-199 tubes, and a heard card from a W6. After all that Les felt mighty relieved and promptly worked three new countries. He'll feel much better, though, after he grabs zone 23.

W3KT is still patiently waiting for a QSL card from AC4YN . . . sure, that will be his 40th!

W2IOP, between changing living QTHs, as well as business QTHs, finds time to work stuff. The last one for ex-editor LeKashman is SV7AA on the Island of Mytillin. Of course now that Larry has worked this guy, he is fully convinced that this should be a new country. It might be old stuff to many of you now, but the operator at SV7AA is TA3AA.

W6DZZ tells me that FY8AC (ex-FM8AC) skeds F8EO daily at 1400 PST. FY8AC gets a little irked with the QRM he has during this sked with other stations trying to bust in for a contact. Take it easy boys; let's keep FY8AC in good humor.

ZD6DH And Nyasaland

From August 12th to the 19th ZD6DH operated at Chileka air field in the southern part of Nyasaland. Bunny's main regrest is that he couldn't have stayed longer in order to give a ZD6 contact to a lot more of the gang. He used to think signing a VQ2 call obtained pretty good results when tossed out with a CQ, but he says you only need to whisper a CQ and sign ZD6, and the whole band collapses on you. The rig he used was a simple affair with a 6L6 crystal oscillator and a 6L6 PA (so-called). At first he was running 10 watts input, and then something blew up in the power supply, thereby raising the

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high voltage. He was then QRO with 15 watts! The antenna was a folded dipole of 300-ohm tape; one end being 40 feet high, while the other was 30 feet. The receiver originally was a BC-348N, but after many modifications, there isn't much resemblance to a BC-348. All in all, Bunny spent 19 hours and 33 minutes on the air contacting 212 stations in 27 countries. His ZD6DH cards have all been filled out and sent to the various QSL bureaus involved. Bunny regrets not being able to take care of the 10 meter gang, but, if he goes to ZD6 again, he guarantees he will be on 10 and 20 c.w. and phone.

W1RVK is still running 100 watts to a 35T on 40 meters. He continues to work stuff like ZB2A 7060, ZB1AJX 7050, HZ1PC 7020, OH7NF 7065, YU1WEZ 7010, and PJ5ZZ 7070. . . . W6FAY says that when 10 was hotter than a two buck 304TL, he fired up his signal shifter, pumped all of its power into a four element beam, and worked a flock of stations in Europe, as well as a VK or two.

W7MBX received a letter from VK9NR, who says it looks as though he will be shoving off from Norfolk Island just about the time you fellows are reading this. Noel also says that he has been receiving QSL cards from a lot of fellows whom he hasn't worked. These cards, of course, don't check with Noel's log; therefore, he doesn't send cards to the guys who claim these QSOs. That's as it should be. He is scheduled to go to either VK2 or VR2, and hopes it is the latter, because in Fiji the weather is warmer. And, they tell me, that isn't all!

As you know, VK9NR is with the Civil Aviation Department. He has been using an 807 in the final with about 10 watts input; the receiver being an HRO. His antenna setup is a bi-square beam.

Now then, getting back to W7MBX, he worked a nice one on phone—AC3SQ. He has been operating in the American phone band around 14,216; however, MBX has sent him a crystal which will get him on 14,190.

W6AY passes along word from YO3RF that he has been appointed QSL manager for Rumania. You will find the QTH in the regular section.

W9WCE has a bit of darn good information from ZS7C. It appears that some W stations are of the opinion that ZS7C is a pirate, since a number of their QSL cards have been returned. ZS7C relates that all Europeans are given a Swazi name by the natives, and they are better known by these names when in Swaziland. For example, his name is "Pikwan," which means "Wings." So, get this, those of you who have had your ZS7C returned, and of course, any of you who expect to send yours in the future, address your card thus: "Pikwan," Goedgegun Post Office, Swaziland, South Africa. ZS7C has been operating on 14,163 c.w., but should be on 28-mc. c.w. at this time.

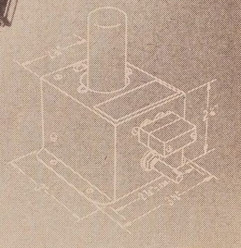
W3DKT wants everyone to know that F9QU/FM8 does QSL, as he has received his card. He tells Charlie that he wants the W gang to know that he will QSL 100% as soon as possible. But, inasmuch as he has to make his cards by hand, it will take some time yet to get caught up. Now, let's not rush him! He reserves credit for even considering handmade cards . . . W6ZZ worked EK1AO and says he is sure he is old-prewar EAR96 and EA4AO. Yep, Miles, you're right. He is the same guy.

You fellows should be interested to know that JA2KQ (ex-J2AHI) is now K2CC. Lloyd says his ambition now with K2CC is to surpass the DX records he made in Japan. Anyone needing a card from JA2KQ or J2AHI can get it by writing to K2CC.

W2ALA worked PA0RU and found out that PZ1M was there and plans on staying in the Netherlands. I understand that EA6EG is putting out a DX bulletin with which he hopes to help make a living. I believe I am correct when I say that he is incapacitated, being unable to do any normal work. He plans on printing this little bulletin and hopes that he can get many of his DX cronies to buy it. Sounds like a pretty good idea to me.

W1DYV jumped down to 10 c.w. to grab off UA1BE and UB5KAD. He also worked a flock of stuff on 10 phone, which indicates that Eddy is getting the bug again.

ZL2GX, after noticing a photograph in July CQ of W1FH, W1ENE, etc., has this to say, "Those DX men are not as bleary-eyed as I had imagined!" Thanks, Jock,



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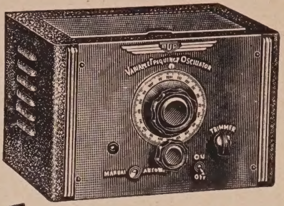

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for those kind words. . . . I am sure those W1s appreciate it. However, I have seen them when . . . . . ???

W2IOP passes along a note from FE8AB saying it looks as though he must go back to France the first part of March, 1950. We'll miss working Ivan on the dark continent, but we'll still get a kick out of working him as F8AB.

ST2TC wrote in for some contest log forms which were sent to him airmail in order to arrive by contest time. The reason I mention this is because his QTH is at an outpost which he calls "in the wilds of Sudan." For example, a letter from Khartoum, in Sudan, takes two weeks to reach him, and regular overseas mail takes more than two months, as it comes a great distance by river boat. This is their only means of communication besides air. . . . W8BHW felt it was about time to add some countries to his already imposing list.

More About PK4DA

Word has come to us that someone was careless in sending a QSL card direct to PK4DA. We have mentioned a couple of times that under no circumstances should you attempt to send a card direct. W6UZX is handling the two-way exchange of cards for PK4DA. If you have worked PK4DA, send a self-addressed stamped envelope to W6UZX along with 25c in stamps which will pay for airmail cards from PK4DA.

VP5BF is ex-VP5XX and is located on Caicos. W4LVV is handling the QSL cards. Don't get this one confused with VP5BD; he is on Cayman.

VQ8AB went to all the trouble of taking a portable rig over to FR8, but the Government on Reunion Island wouldn't allow him to operate. Nuts!

W6AX got tired of seeing his 96 countries in the Honor Roll, so he went out and worked some to boost it into the three figure group. He thinks he might fire up an 807 and give W6BAX a run. . . . I1ER is an old-timer in this wireless racket. In 1912, he was using a coherer and a Ferrie detector to receive signals from the Eiffel Tower. Mario says he keeps looking in our YL page for new and pretty YLs to work, or at least hear. So far, he has worked G2YL, G6YL, OH2YL, and Betty at W3CDQ. I1ER tells me that MI3AB and MI3SC are on 10 and 20 phone, as well as c.w. Also, there are a flock of OQ5 stations on the air in the Belgian Congo nowadays.

Time is short this month. Must get my 50 watts ready for the Contest which is coming up next week. Gee, I sure hope I can work some DX!! It really would be quite novel to work DX in a DX contest. Oh well, don't blame me . . . I'm liable to say anything at this point. 73.

QTHs

AG4AD	QSL to NY4DD (his old call)
EA6AF	Bartolome Pina, Casa de Espana 2, Palma de Mallorca, Balearic Islands, Spain
EA4BV	Via U.R.E.
FY8AC	Robert Martinon (ex-FM8AC) TSF, Cayenne, French Guiana, South America
FF8FP	c/o Pan American World Airways, P.O. Box 583, Dakar
HC8ME	Hugo Martinez, Puerto Baquerizo, Galapagos Island
HZ1PC	Via R.S.G.B.
MD7HV	M.E.L.F. 3, Cyprus Signal Squadron, Nicosea, Cyprus
OQ5DZ	Dr. Frans Vanderick, Kabagyi, Ruanda-Urundi
ST2TC	Theodore Christodoulides, International Aeradio Ltd., P.O.B. 25, Malakal, Sudan
SV0AL	QSL via R.S.G.B.
VQ8AX	P.O. Box 155, Port Louis, Mauritius
XZ2SY	P.O. Box 833, Rangoon, Burma
YV5AR	Carlos A. Giffoni, P.O. Box 3263, Caracas, Venezuela, South America
ZB2A	Via R.S.G.B.
ZD2P	(now signing ZD2DCP) c/o Posts and Telegraphs, Port Harcourt, Nigeria, West Africa
ZA3B	Official Coast Radio Station, Durazzo
ZS7C	"Pikwan", Goedgegun Post Office, Swaziland, South Africa
ZS9J & ZS9F	Box 4, Victoria Falls, Southern Rhodesia
Roumania QSL Bureau	c/o George Crain, YO3RF, QSL Manager AAUSR, Box 95, Bucuresti

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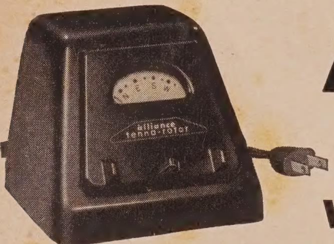

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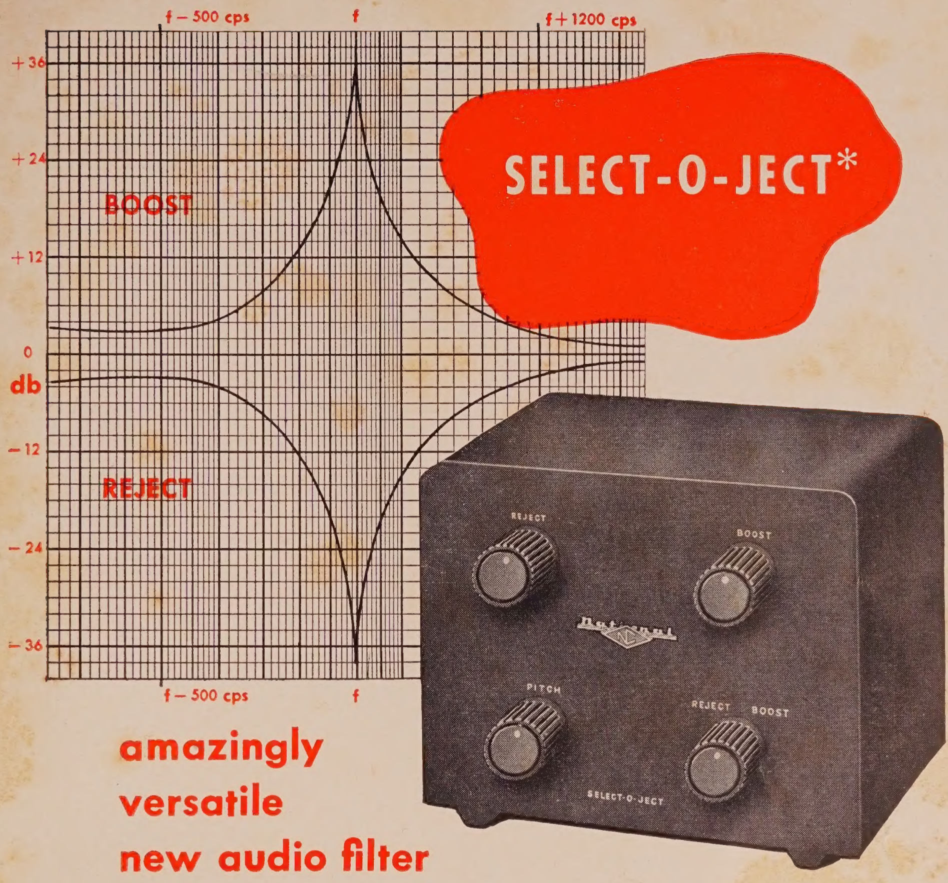

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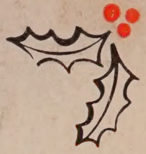
To: All Radio Amateurs

Remarks: A 599 Xmas es FB New Year... **Hr on:** 12/25 1949

From: The RCA Tube Dept. Gang



73—

RCA TUBES

W1OFS/9—Wally Pond...**K2AH**—George Rose...**W2ADY**—Bob Lord...**W2AYY**—Horace Hanthorn...**W2BRP**—Joe Evon...**W2CBL**—George Jones...**W2CDP**—Ken Bucklin...**W2CYR**—Ted Dawson...**W2DGN**—Russ Huntington...**W2FTW**—Jim Owens...**W2FZV**—Ed Smith.....**W2GQK**—John Sterner.....**W2HEA**—A. G. Petrasek.....**W2IAR**—Charles Poskonka...**W2IOP**—Larry LeKashman....**W2IYG**—Clarence West....**W2JSX**—Mattie Bell...**W2LHP**—Bob Cohen...**W2QJV**—Larry Freeman....**W2QLB**—Syl Walczak....**W2RBO**—Don Power...**W2RVV**—Tony Sariti...**W2RYI**—Mack Seybold...**W2SDO**—Tony Maugeri....**W2TQS**—Herb McCord....**W2UIJ**—Dave Koch....**W2VBL**—Pat Patterson...**W2WCT**—Hal Stamm....**W2WDR**—Jack Wasserman....**W2YM**—George Hanchett....**W2YQM**—Bill Kern...**W2YXL**—Bob Klein...**W2ZPD**—Frank Neuner...**W2ZXL**—George Flenner...**W3CHV**—LeRoy Wenger...**W3EJN**—Charles Cramer...**W3EOB**—Fred Koeng...**W3EWR**—Dick Wenger...**W3FEI**—George Shenberger...**W3FIE**—Jim Stone...**W3FX**—Charles Fisher...**W3KBZ**—Andy Rau...**W3KKX**—Ted Schreiber...**W3KRA**—Jim Rill...**W3LIL**—Andy Nekut...**W3MNX**—Harry Pully...**W3NFF**—Hideo Takeuchi....**W3NOI**—Bob Carvell....**W3NOK**—Charles Nesslage....**W3OXG**—Merrald Shrader....**W3PAX**—Jim Weaver...**W3PGL**—Gene Duckworth...**W3PSK**—Henry Kazanowski...**W3PTD**—Dave Ballard...**W3TLH**—Merle Hoover....**W3VRR**—Paul Klinko....**KL7BV/W3**—Frank Arams...**W4AYT**—Randy Frisbee...**W4MUR**—Bill Jackson.....**W8BPD**—John Driver.....**W9GZE**—Steve Johnson...**W9HYF**—John Spooner...**W0MKU**—Norm Graham...

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